

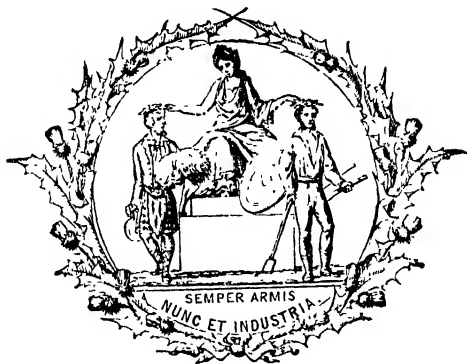


AGRICULTURAL RESEARCH INSTITUTE
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TRANSACTIONS
OF
THE HIGHLAND AND AGRICULTURAL
SOCIETY OF SCOTLAND

WITH
AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL
MEETINGS, AND THE PREMIUMS OFFERED BY
THE SOCIETY IN 1914

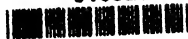
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TRANSACTIONS
OF
THE HIGHLAND AND AGRICULTURAL
SOCIETY OF SCOTLAND

THE FOOD OF BIRDS.

REPORT FOR THE YEARS 1911-1912.

By LAURA FLORENCE, M.A., B.Sc., Carnegie Fellow in the
University of Aberdeen.

IN the first Report published in 1912 (*Trans.*, High. and Agric. Soc.) the crop contents of six hundred and sixteen birds were described. Since then one thousand three hundred and ninety birds have been examined. The majority were shot while feeding on agricultural land, and were obtained chiefly in the north-eastern counties of Scotland. A few notes on the food of young terns and gulls, and field notes on the greenfinch and pied wagtail have been made. On two occasions the fæces of greenfinches were examined.

The investigation is not confined to a limited number of species, and in many cases an insufficient number have been examined for an opinion to be expressed as to their utility. In every case the records are given, as the details may be of interest to other investigators.

Following the plan of Mr Newstead (10),¹ a summary of the results is given at the end of each species. The insect food is grouped under three heads according as it is beneficial, injurious, or indifferent in its relation to agriculture, but, owing to the fragmentary condition in which much of it is found, complete

¹ For list of References see p. 74.

accuracy is impossible. The insects met with include weevils and beetles of many kinds and their larvæ, dipterous insects and larvæ, saw-flies and larvæ, ichneumon flies, ants, bees, earwigs, plant lice, gall-making insects, and caterpillars.

In the summer of 1910 crane-flies were eaten by many birds, and in the case of rooks and of gulls, particularly the black-headed gull, the eggs of these insects were present in very large numbers. In the two succeeding summers the records of crane-fly were much fewer and the eggs were not only less frequently found, but, with one exception, in much smaller numbers. In order to see whether the eggs would hatch after passing through the birds, they were carefully removed from different parts of the alimentary canal, and preserved in damp earth. In no case was there any result.

Other animal food consisted of earthworms, spiders, centipedes, millepedes, small crustaceans, molluscs, and the remains of small mammals and birds. Of the fish-eating birds few specimens have been examined, and in most cases it was impossible to determine the species owing to the condition of the remains.

The vegetable foods found are cereals, potato, turnip, leaves, seeds of noxious weeds, and wild and cultivated fruits.

The grit found in the gizzards is not recorded, except where it formed the bulk of the content.

In many instances the grain had evidently been got from dung, while the birds were searching for the insects to be found there. In other cases the presence of sprouted grain proved the fields to have been the source of supply, while the small birds doubtless obtained much from farmyards. There are not many records of potato as food, except among the rooks, and turnip has been seldom found.

Seeds of weeds play an important part in the food of the finches, buntings, hedge sparrow, skylark, linnet, and many others. Many of the seeds are destroyed, either before being swallowed or in their passage through the intestinal canal, but this is not always the case, and a description of experiments to test to what extent different species of birds are instrumental in disseminating weeds has been given by Mr Collinge (3). The cultivated fruits found are gooseberries, strawberries, raspberries, currants, cherry, and apple fragments, and during autumn and early winter months wild fruits are frequently recorded.

In estimating the true nature of the food of the birds of any area the source of supply must play an important part, and to quote Mr Archibald (1), "it would be unwise to attempt to show the proportion in which the components of their food are consumed, because individuals of the same species vary much according to opportunity and their own particular fancy. For

this reason it would require records extending over several years, and including observations on an enormous number of birds from different localities, to enable us to draw any definite conclusions as to the proportionate amount of good and harm with which each species should be credited."

The following is a list of the birds examined, their number in the Report, and the number of specimens of each:—

Species.	No. in Report.	No. of Specimens.	Species.	No. in Report.	No. of Specimens.
Mistle Thrush . . .	1-12	12	Sparrow-Hawk . . .	937-938	2
Song Thrush . . .	13-39	27	Peregrine Falcon . . .	939	1
Redwing . . .	40-42	3	Kestrel . . .	940-945	6
Fieldfare . . .	43-44	2	Common Cor-		
Blackbird . . .	45-111	67	morant . . .	946	1
Wheatear . . .	112-113	2	Gannet . . .	947	1
Stonechat . . .	114	1	Heron . . .	948-954	7
Redbreast . . .	115-124	10	Mallard . . .	955-957	3
Golden - crested			Teal . . .	958	1
Wren . . .	125	1	Widgeon . . .	959-960	2
Willow Wren . . .	126	1	Golden - eye		
Hedge Sparrow . . .	127-136	10	Duck . . .	961	1
Dipper . . .	137-139	3	Goosander . . .	962	1
Great Titmouse . . .	140-143	4	Wood-Pigeon . . .	963-991	29
Coal Titmouse . . .	144-145	2	Rock-Dove . . .	992	1
Blue Titmouse . . .	146-154	9	Pheasant . . .	993	1
Wren . . .	155-158	4	Partridge . . .	994	1
Tree-Creeper . . .	159	1	Land-Rail . . .	995	1
Pied Wagtail . . .	160-162	3	Moor-Hen . . .	996-1011	16
Meadow-Pipit . . .	163-165	3	Ringed Plover . . .	1012-1014	3
Swallow . . .	166-167	2	Golden Plover . . .	1015-1021	7
Greenfinch . . .	168-245	78	Lapwing . . .	1022-1059	38
House Sparrow . . .	246-326	81	Turnstone . . .	1060-1061	2
Chaffinch . . .	327-390	64	Oyster-Catch'r . . .	1062-1069	8
Linnet . . .	391-395	5	Snipe . . .	1070	1
Bullfinch . . .	396-403	6	Dunlin . . .	1071-1079	9
Crossbill . . .	404-406	3	Purple Sand-		
Corn-Bunting . . .	407-417	11	piper . . .	1080	1
Yellow Bunting . . .	418-435	18	Sanderling . . .	1081	1
Reed-Bunting . . .	436	1	Curlew . . .	1082-1086	5
Snow-Bunting . . .	437-463	27	Common Tern . . .	1087-1104	18
Starling . . .	464-570	107	Little Tern . . .	1105	1
Magpie . . .	571-572	2	Black-headed		
Jackdaw . . .	573-575	3	Gull . . .	1106-1242	137
Raven . . .	576-578	3	Common Gull . . .	1243-1320	78
Carrion Crow . . .	579-586	8	Herring Gull . . .	1321-1373	53
Hooded Crow . . .	587-595	9	Lesser Black-		
Rook . . .	596-883	288	backed Gull . . .	1374-1375	2
Skylark . . .	884-907	24	Great Black-		
Swift . . .	908	1	backed Gull . . .	1376-1380	5
Lesser Spotted			Kittiwake		
Woodpecker . . .	909-910	2	Gull . . .	1381-1385	5
Long-eared Owl . . .	911-920	10	Razorbill . . .	1386-1387	2
Tawny Owl . . .	921-935	15	Guillemot . . .	1388-1389	3
Rough - legged			Little Grebe . . .	1390	1
Buzzard . . .	936	1.			

Thanks are due to all those who kindly sent in birds, to Professor J. Arthur Thomson and to Professor J. W. H. Trail for much kind assistance and encouragement, and to Mr C. J. Gahan, British Museum, for the identification of beetle larvæ. The work has been done during my tenure of a Carnegie Fellowship.

MISTLE THRUSH (*Turdus viscivorus*, Linn.).

1. Male; Locality (?); 13th March 1911: 4 earth-worms; larvæ—4 "leather-jackets" (larvæ of crane-fly); 5 ground beetle larvæ (*Carabidae*), 1 larva (*Telephorus fuscus*); 1 weevil (*Sitones* sp.).
2. Male; Largo, Fifeshire; 25th April 1911: 2 cases of Lepidopterous larvæ (*Coleophora* sp.).
3. Male; Ardlach, Nairnshire; 11th May 1911: 13 whole and 10 fragments of wire-worms; fragment of a weevil; head of a rove beetle (*Staphylinidae*).
4. Male; Old Aberdeen; 16th June 1911: remains of earth-worms; fragments of chitin; 30 flower-heads and stamens of the maple (*Acer pseudo-platanus*).
5. Female; Craibstone, Aberdeenshire; 21st October 1911: 1 earth-worm; remains of rowans and 15 rowan seeds (*Pyrus Aucuparia*).
6. Male; Scotston, Aberdeenshire; 7th November 1911: 1 earth-worm; weevils (1 *Sitones puncticollis*, 1 *Otiorrhynchus picipes*, head of *Hypera* sp.); beetles (1 *Notiophilus biguttatus*, 1 head of a beetle); 2 spiders (*Neriene bicolor*); 1 much-digested seed (?).
7. Male; Scotston, Aberdeenshire; 14th November 1911: a few blades of grass; elytron of a beetle.
8. Male; Craibstone, Aberdeenshire; 25th May 1912: 2 beetles (*Philonthus laminatus*); 1 weevil (*Barynotus schönherri*); fragment of caterpillar; fragment of a spider; a few pieces of grass and moss.
9. Female; Craibstone, Aberdeenshire; 15th June 1912: 4 weevils (2 *Sitones* sp., 1 *Barynotus* sp., 1 *Otiorrhynchus* sp.); fragments of 2 rove beetles and head of a beetle (?); 7 ants (*Myrmica rubra*); a few pieces of grass and moss.
10. Male; Parkhill, Aberdeenshire; 30th July 1912: 1 earth-worm; 7 weevils (6 *Sitones* sp., 1 *Barynotus schönherri*); beetles (1 *Aphodius* sp., head of a rove beetle); 1 frog-hopper (*Philænus spumarius*); head of an insect (?); 1 fruit of knawel (*Scleranthus annuus*); grass. Two eggs of a crane-fly were found in the intestine.
11. Female; Skene, Aberdeenshire; 8th October 1912: 1 whole and remains of 9 fruits of the white beamtree (*Pyrus Aria*); 7 seeds of the white beam; thorax of a ground beetle.
12. Male; Parkhill, Aberdeenshire; 15th October 1912: filled with remains of the fruits and 8 seeds of the white beamtree.

Summary.—5 contained earth-worms; 2, spiders; 7, insects of injurious group; 5, beneficial group; 2, indifferent group; 4, grass; 5, fruits and seeds; 1, flower-heads.

SONG THRUSH (*Turdus musicus*, Linn.).

13. Male; Ardlach, Nairnshire; 11th May 1911: 1 earth-worm; 1 "leather-jacket" (larva of a crane-fly); fragments of a weevil; 1 caterpillar (*Xylophasia lithozylea*); a few husks of grain; grass.
14. Male; Craibstone, Aberdeenshire; 5th June 1911: 1 earth-worm; 1 Dipteron (*Bibio* sp.); 2 wire-worms.

15. Female; Craibstone, Aberdeenshire; 15th June 1911: 1 ichneumon fly (*Ichneumon luctatorius*); 2 wire-worms; remains of a caterpillar (*Noctuidæ*); head of a rove beetle; decomposed vegetable matter.
16. Female; Craibstone, Aberdeenshire; 15th June 1911: beetles (1 *Corymbites cupreus*, 1 *Pterostichus* sp.); abdomen of a weevil; decomposed animal matter.
17. Male; Skeabost, Skye; 23rd June 1911: 2 weevils (*Barynotus schönherri*); remains of beetles (*Staphylinus* sp., *Cryptohypnus* sp.); 1 saw-fly larva (*Tenthredinidæ*); fragments of 4 caterpillars (*Noctuidæ*); 1 ground beetle larva; 1 saw-fly (*Allantus* sp.).
18. Male; Ardelach, Nairnshire; 30th June 1911: remains of earth-worms; fragment of a beetle larva; grass; moss; fir needles; 3 fruits of the wood-rush (*Luzula pilosa*); 1 fruiting spike of sheep-sorrel (*Rumex Acetosella*).
19. Male; Craibstone, Aberdeenshire; 18th July 1911: 3 wire-worms; remains of 2 beetles (*Athous* sp.); remains of gooseberries; carpels of strawberries; grass.
20. Female; Craibstone, Aberdeenshire; 1st September 1911: 6 whole and fragments and seeds of rowans (*Pyrus Aucuparia*).
21. Male; Craibstone, Aberdeenshire; 28th September 1911: filled with remains of rowans; fragments of the skins of 2 larvæ (?).
22. Male; Lower Parkhill, Aberdeenshire; 8th January 1912: 2 beetles (*Tachyporus hypnorum*, *Stenus similis*); elytra of a weevil; fragment of a spider; decomposed vegetable matter; fragments of shell.
23. Male; Craibstone, Aberdeenshire; 19th February 1912: 1 beetle (*Bembidium littorale*); remains of an earth-worm; fragment of a leaf; moss.
24. Female; Craibstone, Aberdeenshire; 24th February 1912: 1 earth-worm; 1 rove beetle (*Othius fulvipennis*); grass.
25. Male; Craibstone, Aberdeenshire; 24th February 1912: piece of an earth-worm; grass; 4 ovaries of a grass.
26. Female; Craigdam, Aberdeenshire; 24th April 1912: weevils (6 *Sitones* sp., 7 *Otiorrhynchus* sp.); beetles (1 *Cryptohypnus riparius*, head of beetle?); remains of 1 ground beetle larva; 13 pieces of the skins of larvæ (? "leather-jackets"); skin of 1 caterpillar.
27. Male; Craibstone, Aberdeenshire; 11th May 1912: 12 weevils (*Barynotus schönherri*); 1 beetle (*Philonthus æneus*); 1 "leather-jacket"; 2 wire-worms (*Athous hæmorrhoidalis*, *Corymbites pectinicornis*); grass.
28. Male; Craibstone, Aberdeenshire; 25th May 1912: 1 Dipteron (*Bibio* sp.); a small piece of grass.
29. Male; Craibstone, Aberdeenshire; 25th May 1912: abdomen of a beetle; 1 larva of a Dipteron; remains of 3 "leather-jackets."
30. Male; Craibstone, Aberdeenshire; 15th June 1912: remains of earth-worms; remains of 8 caterpillars (*Noctuidæ*); remains of an ichneumon fly (*Ichneumon* sp.); wing of a Dipteron; fragments of a Hymenopteron; grass.
31. Female; Craibstone, Aberdeenshire; 22nd June 1912: head of a beetle (?); decomposed vegetable matter.
32. Sex (?); Milltimber, Aberdeenshire; 23rd July 1912: 23 achenes of strawberries; 14 seeds of a currant (*Ribes* sp.); 1 seed of raspberry (*Rubus Idæus*); fragments of skins of currants.
33. Male; Milltimber, Aberdeenshire; 23rd July 1912: 5 achenes of strawberry; 5 seeds of a currant (*Ribes* sp.); fragments of skins of currants.
34. Male; Parkhill, Aberdeenshire; 30th July 1912: remains of earth-worms; 1 saw-fly larva (*Tenthredinidæ*); 53 seeds of raspberry (*Rubus Idæus*); grass.

35. Male; Craibstone, Aberdeenshire; 3rd August 1912: remains of earth-worms; 1 beetle (*Calathus melanocephalus*); 1 weevil (*Otiorrhynchus* sp.); 1 Dipteron (*Anthomyidæ*); 1 frog-hopper (*Philænus spumarius*); 4 saw-fly larvæ (*Tenthredinidæ*); 11 empty pupa cases; 17 seeds of raspberry (*Rubus Idæus*); a few fragments of leaves, moss, and vegetable matter. In the intestine were found 19 raspberry seeds and 7 empty pupa cases.
36. Male; Craigdam, Aberdeenshire; 17th August 1912: remains of earth-worms; remains of 3 larvæ of ground beetles; head of an insect; 12 seeds of raspberry. In the intestine 2 seeds of raspberry.
- 37-39. Three birds, examined 28th January-1911, 31st July 1911, and 13th July 1912, were found empty.

Summary.—12 contained insects of injurious group; 8, of beneficial group; 5, of indifferent group; 6, earth-worms; 1, spider; 9, grass; 8, fruit; 2, seeds.

REDWING (*Turdus iliacus*, Linn.).

40. Female; Craigdam, Aberdeenshire; 13th January 1911: remains of 2 grey slugs (*Agriolimax* sp.).
41. Female; Murcar, Aberdeenshire; 6th February 1912: filled with remains of small Crustaceans (*Talitrus locusta*, *Orchestia littorea*); fragments of a weevil.
42. Female; Murcar, Aberdeenshire; 6th February 1912: 8 egg-cases of the dog whelk; fragment of a crab; beetles (1 *Platystethus arenarius*, 1 *Helophorus* sp., head of a rove beetle); 2 larvæ of a Lamellicorn beetle (? *Melolontha vulgaris*).

Summary.—2 contained Crustacea; 2, insects of injurious group; 1, indifferent group; 2, mollusc.

FIELDFARE (*Turdus pilaris*, Linn.).

43. Female; Aberdeen; 23rd January 1912: beetles (1 *Megasternum boletophagum*, 1 *Homalota vicina*, 1 *Quedius umbrinus*); weevils (1 *Otiorrhynchus picipes*, 7 *Sitones* sp.); 3 Dipterous larvæ; 1 wire-worm; remains of 1 beetle larva.
44. Female; Aberdeen; 23rd January 1912: 1 beetle (*Megasternum boletophagum*); 5 weevils (*Sitones* sp.); 1 larva of a Dipteron; grass.

Summary.—Both contained insects of injurious and indifferent groups.

BLACKBIRD (*Turdus merula*, Linn.).

45. Male; Nairn, Nairnshire; 13th January 1911: fragments of endocarp and mesocarp of hawthorn (*Cratægus* sp.); 4 holly seeds (*Ilex aquifolium*).
46. Female; Nairn, Nairnshire; 13th January 1911: 2 corn grains; husks and fragments of grain; 1 piece of potato; pulpy mesocarp of hawthorn (*Cratægus* sp.).
47. Male; Elgin, Morayshire; 23rd February 1911: filled with pieces of potato and husks of grain.
48. Male; Elgin, Morayshire; 23rd February 1911: husks of grain; larva of ground beetle (*Carabidæ*); remains of several weevils (*Otiorrhynchus* sp., *Sitones* sp.); forceps of an earwig.
49. Male; Elgin, Morayshire; 23rd February 1911: a few grain husks.
50. Male; Craigdam, Aberdeenshire; 20th March 1911: larva of a Dipteron; 2 small pieces of potato; grass.

51. Male; Craigdam, Aberdeenshire; 20th March 1911: a few grain husks; elytra of small beetle.
52. Male; Ardcloch, Nairnshire; 11th May 1911: 1 "leather-jacket" (larva of crane-fly); remains of 4 wire-worms; larva of ground beetle; 3 beetles (*Philonthus laminatus*); fragments of 2 weevils (*Barynotus* sp.); grass.
53. Female; Aberdeen; 19th May 1911: husks and fragments of grain; abdomens of 2 beetles (?); fragment of skin of a larva.
54. Sex (?); Aberdeen; 25th May 1911: grass.
55. Male; Craigdam, Aberdeenshire; 26th May 1911: 1 beetle (*Lathrobium elongatum*); 22 Diptera (*Bibio* sp.); remains of 1 Dipteron; remains of 2 saw-flies (*Tenthredo* sp.); remains of 5 "leather-jackets"; fragment of beetle larva.
56. Male; Elgin, Morayshire; 16th June 1911: husks and fragments of grain; 3 weevils (1 *Barynotus schönherri*, 2 *Sitones* sp.).
57. Male; Skeabost, Skye; 23rd June 1911: fragments of chitin formed about half the content; beetles (1 *Quedius mesomelinus*, 1 *Philonthus ceneus*, 1 *Melanotus* sp.); 1 ground beetle larva; 1 larva (*Telephorus fuscus*); 1 ant (*Formicoxenus nitidulus*); 1 stone-fly (*Nemura* sp.); fragments of 2 ichneumon flies; 1 snail (*Zua lubrica*); grass.
58. Male; Ardcloch, Nairnshire; 30th June 1911: 2 "leather-jackets"; remains of a millepede (*Julus* sp.); grass.
59. Female; Aberdeen; 11th July 1911: seeds—1 stone of cherry or gean (*Prunus*), 7 seeds of rowan (*Pyrus Aucuparia*); 26 carpels of strawberry; remains of gooseberries and strawberries; 3 weevils (*Otiorrhynchus picipes*); head and thorax of beetle (*Athous* sp.).
60. Female; Mintlaw, Aberdeenshire; 14th July 1911: 1 earth-worm; 2 larvæ of a Dipteron; fragment of a larva (?); 2 snails (*Zonites* sp.); 1 beetle (*Xantholinus* sp.); 83 eggs of crane-fly (*Tipula* sp.); a few grain husks; grass.
61. Female; Craibstone, Aberdeenshire; 18th July 1911: 3 red currants; 52 seeds of red currants; remains of gooseberries and strawberries; 1 ichneumon fly (*Cryptus* sp.); remains of 1 harvestman; fragment of 1 spider; fragment of an insect; beetles (1 *Telephorus figuratus*, var. *scoticus*, 1 *Philonthus laminatus*, fragment of rove beetle).
62. Female; Elgin, Morayshire; 7th August 1911: remains and seeds of gooseberries; seeds of the rowan (*Pyrus Aucuparia*).
63. Male; Elgin, Morayshire; 7th August 1911: 2 whole and remains of several fruits of the cherry laurel (*Prunus*); seeds—1 gooseberry seed, 33 carpels of rose hips (*Rosa* sp.).
64. Male; Craibstone, Aberdeenshire; 1st September 1911: 9 whole and skins and seeds of rowans (*Pyrus Aucuparia*); a few fragments of moss; fragments of beetles; fragments of 3 ichneumon flies; 1 Hymenopteron (*Chalcididae*).
65. Male; Craibstone, Aberdeenshire; 1st September 1911: remains of small caterpillar (?); fragments of chitin; fragment of a millepede.
66. Male; Craibstone, Aberdeenshire; 5th September 1911: 1 much-digested seed (?); 1 beetle larva (*Acilius* sp.); fragment of larva (?); fragments of several insects.
67. Male; Craibstone, Aberdeenshire; 28th September 1911: filled with rowans (*Pyrus Aucuparia*).
68. Male; Craibstone, Aberdeenshire; 28th September 1911: 2 whole and remains of several fruits of cherry laurel (*Prunus* sp.); endocarp of a gean (*Prunus avium*); fragment of a beetle.
69. Male; Craibstone, Aberdeenshire; 28th September 1911: remains of rowans (*Pyrus Aucuparia*); fragments of 3 insects (?); 1 harvestman (*Phalangium* sp.).

70. Female; Craibstone, Aberdeenshire; 28th September 1911: remains of rowans (*Pyrus Aucuparia*).
71. Female; Craibstone, Aberdeenshire; 28th September 1911: rowans (*Pyrus Aucuparia*); remains of small weevil (?); head of immature beetle; legs of insects.
72. Female; Craibstone, Aberdeenshire; 28th September 1911: seeds and fragments of skins of rowans (*Pyrus Aucuparia*); a few fragments of chitin.
73. Sex (?); Craibstone, Aberdeenshire; 14th October 1911: 8 whole and remains of rowans (*Pyrus Aucuparia*).
74. Male; Craibstone, Aberdeenshire; 21st October 1911: remains of rowans (*Pyrus Aucuparia*); fragment of an insect (?); remains of a millepede.
75. Female; Craibstone, Aberdeenshire; 21st October 1911: 1 whole and remains of rowans (*Pyrus Aucuparia*).
76. Male; Craibstone, Aberdeenshire; 21st October 1911: packed with remains of rowans; fragment of an insect (?).
77. Female; Craibstone, Aberdeenshire; 11th November 1911: 1 whole and several pieces of fruits of holly (*Ilex aquifolium*); 35 seeds of rowans (*Pyrus Aucuparia*).
78. Male; Craibstone, Aberdeenshire; 11th November 1911: remains of a millepede; decomposed vegetable matter.
79. Male; Scotston, Aberdeenshire; 14th November 1911: decomposed vegetable matter; seeds—5 chickweed (*Stellaria media*), 1 fruit of knot-grass (*Polygonum aviculare*); larva of Dipteron.
80. Male; Craibstone, Aberdeenshire; 18th November 1911: 1 earthworm; beetles (1 *Hydrothassa aucta*, 2 *Xantholinus punctulatus*, head of rove beetle, elytra of beetle); 1 weevil (*Sitones* sp.); 1 spider (*Nerienne bicolor*); 1 Dipteron (*Lonchoptera* sp.); fragments of Dipteron (*Ephydridæ*); fragments of 3 caterpillars (?); 2 larvæ of Diptera; carpel of buttercup (*Ranunculus* sp.); grass.
81. Male; Kincorth, Kincardineshire; 12th December 1911: 1 earthworm; fragments of several larvæ (?); 1 beetle (*Othius myrmecophilus*); fragments of rove beetles; 1 harvestman (*Nemastoma lugubre*); seeds—1 sheep-sorrel (*Rumex Acetosella*), 3 achenes of buttercup (*Ranunculus repens*); decomposed vegetable matter.
82. Male; Kincorth, Kincardineshire; 12th December 1911: remains of a spider; 1 beetle (*Quectius tristis*); fragments of rove beetles; head of small weevil; seeds—3 nutlets of self-heal (*Prunella vulgaris*), 1 ovary of a small grass, fragment of an ovary; decomposed vegetable matter.
83. Male; Blackburn, Aberdeenshire; 6th January 1912: remains of a grey slug (*Agriolimax* sp.); 1 Dipteron (*Trichocera bimacula*); 2 beetles (*Notiophilus biguttatus*, *Tachinus rufipes*); 1 weevil (*Sitones puncticollis*); 2 caterpillars (*Triphæna pronuba*); 2 Dipterous larvæ; 2 ground beetle larvæ (*Carabidæ*); remains of 2 spiders (*Lycosa* sp.); 1 pupa case; a few pieces of potato; grass.
84. Female; Blackburn, Aberdeenshire; 6th January 1912: 132 Dipterous larvæ (? *Bibio* sp.); 1 larva of a Dipteron; 37 galls (*Neuroterus numismalis*); 3 galls (*Neuroterus lenticularis*); head of rove beetle; 1 pupa case; grass.
85. Male; Craibstone, Aberdeenshire; 23rd January 1912: 1 beetle (*Helophorus rugosus*); 1 larva of a ground beetle (*Pterostichus* sp.); 1 larva of a Dipteron; grass; seeds—8 spurrey (*Spergula arvensis*, var. *sativa*), 1 knot-grass (*Polygonum aviculare*), 2 rye-grass (*Lolium perenne*), 1 black bindweed (*Polygonum Convolvulus*).
- 86-88. Males; Craibstone, Aberdeenshire; 6th February 1912: filled with husks and fragments of cereals. The birds were shot in a snowstorm.

89. Male; Craibstone, Aberdeenshire; 19th February 1912: 1 weevil (*Sitones puncticollis*); 1 "leather-jacket"; 4 larvæ of Diptera; decomposed vegetable matter.
90. Female; Craibstone, Aberdeenshire; 24th February 1912: 2 weevils (*Sitones* sp., *Hypera* sp.); piece of an egg-case (? of leech); decomposed vegetable matter.
91. Female; Craigdam, Aberdeenshire; 27th February 1912: 1 earth-worm; 2 beetles (*Helophorus aeneipennis*, *Xantholinus* sp.); 1 weevil (*Tropiphorus tomentosus*); 1 larva of a Dipteron; grass; fragment of a seed.
92. Female; Craibstone, Aberdeenshire; 11th May 1912: 1 beetle (*Philonthus aeneus*); 1 weevil (*Sitones* sp.); piece of an earth-worm; 3 millepedes (2 *Julus terrestris*, 1 *Polydesmus complanatus*); remains of a looper caterpillar (*Geometra*); pine needles.
93. Male; Craibstone, Aberdeenshire; 18th May 1912: beetles (14 *Telophorus nigricans*, var. *discoideus*, 1 *Philonthus varius*, 1 *Silpha rugosa*, thorax of click beetle, head of rove beetle); 5 weevils (*Barynotus schönherri*); 1 beetle larva (*Silphidæ*); 1 spider (*Salticus* sp.); 1 Dipteron (*Hilara* sp.).
94. Female; Craibstone, Aberdeenshire; 18th May 1912: beetles (10 *Telophorus nigricans*, var. *discoideus*, 2 *Agriotes obscurus*, 1 *Cryptohypnus riparius*, head of rove beetle); 14 weevils (*Barynotus schönherri*); 2 Diptera (*Pollenia rudis*, *Hilara* sp.).
95. Male; Craibstone, Aberdeenshire; 8th June 1912: 2 "leather-jackets"; fragment of a caterpillar; head of rove beetle; grass.
96. Male; Countesswells, Aberdeenshire; 13th June 1912: remains of 3 earth-worms; 3 wire-worms (*Athous* sp.); 6 "leather-jackets"; 1 beetle (*Corymbites cupreus*); head of rove beetle; fragments of legs and elytra of beetles; grass.
97. Male; Craibstone, Aberdeenshire; 6th July 1912: beetles (4 *Aphodius rufipes*, 3 *Aphodius* sp., 3 *Tachinus marginellus*, 1 *Magasternum boletophagum*, 1 *Pterostichus* sp., 2 heads of rove beetles; weevils (1 *Barynotus schönherri*, 1 *Otiorrhynchus picipes*, 3 *Otiorrhynchus* sp.); 1 ichneumon fly (*Pimpla Graminella*).
98. Male; Craibstone, Aberdeenshire; 6th July 1912: filled with pieces of strawberry and achenes of strawberry; 1 beetle (*Cryptohypnus riparius*); 1 ground beetle larva (*Carabus* sp.).
99. Female; Milltimber, Aberdeenshire; 23rd July 1912: 5 achenes of strawberry; a few fragments of skins of currants (*Ribes* sp.).
100. Male; Countesswells, Aberdeenshire; 30th July 1912: packed with pieces and seeds of gooseberries. 27 seeds of gooseberry in the intestine.
101. Female; Parkhill, Aberdeenshire; 30th July 1912: 1 earth-worm; fragments of an insect; 8 seeds of raspberry (*Rubus Idæus*); grass. In the intestine were 1 ant (*Myrmica rubra*); wing of an insect (*Hymenoptera*); 20 seeds of raspberry.
102. Female; Craigdam, Aberdeenshire; 17th August 1912: filled with skins and seeds of rowans (*Pyrus Aucuparia*); 1 larva of a Dipteron; fragment of a beetle. In the intestine were seeds and skins of rowans.
103. Male; Craigdam, Aberdeenshire; 17th August 1912: 1 whole and skins and seeds of rowans (*Pyrus Aucuparia*); 1 earth-worm. 45 rowan seeds in the intestine.
- 104, 105. Male and female; Craibstone, Aberdeenshire; 21st September 1912: both packed with rowans and the remains of rowans.
106. Female; Craibstone, Aberdeenshire; 5th October 1912: forceps of 2 earwigs; fragments of beetles and weevils; 2 seeds of raspberry (*Rubus Idæus*); earth formed the bulk of the content.

107. Female; Parkhill, Aberdeenshire; 15th October 1912: packed with remains of fruits and seeds of white beam (*Pyrus Aria*); 10 seeds of a shrub (? *Cotoneaster* sp.). 3 seeds of the white beam in the intestine.
108. Female; Parkhill, Aberdeenshire; 15th October 1912: packed with remains of earth-worms; fragments of beetles and weevils.
109. Female; Countesswells, Aberdeenshire; 9th December 1912: 19 corn grains; husks and fragments of grain.
110. Female; Countesswells, Aberdeenshire; 9th December 1912: 1 seed of a Crucifer; 1 seed of rye-grass (*Lolium perenne*); 1 seed of chickweed (*Stellaria media*); fragments of cereal.
111. One bird, examined 14th April 1911, was found empty.

Summary.—33 contained insects of indifferent group; 27, injurious group; 13, beneficial group; 9, earth-worms; 5, spiders; 5, millepedes; 2, snails; 1, slug; 23, fruit; 18, seeds; 14, grass; 12, cereals; 5, potato.

WHEATEAR (*Saxicola oenanthe*, Linn.).

112. Male; Tarbet Ness Lighthouse; 25th April 1911: fragment of elytron of a beetle.
113. Male; Tarbet Ness Lighthouse; 25th April 1911: skins of 16 Dipterous larvæ; fragments of chitin.

STONECHAT (*Pratincola rubicola*, Linn.).

114. Female; Kincorth, Kincardineshire; 12th December 1911: beetles (1 *Tachyporus chrysomelinus*, 1 *Philonthus fimetarius*, 1 *Stenus Juno*, 1 *Notiophilus biguttatus*, 1 *Helophorus rugosus*, head of rove beetle); fragment of 1 Dipteran; remains of 1 earwig; 1 rat-tailed maggot (larva of *Eristalis* sp.); remains of 25 Dipterous larvæ; remains of 3 beetle larvæ; pieces of skins of 2 caterpillars.

REDBREAST (*Erithacus rubecula*, Linn.).

115. Male; Nairn, Nairnshire; 11th January 1911: husks and fragments of grain; 1 gall (*Neuroterus ? lenticularis*).
116. Male; Nairn, Nairnshire; 11th January 1911: crumbs of bread; endocarp of a bramble; 1 seed of a fleshy fruit (?).
117. Male; Craibstone, Aberdeenshire; 13th June 1911: fragments of several beetles; part of head of a weevil; 48 eggs of a crane-fly (*Tipulidæ*).
118. Male; Craibstone, Aberdeenshire; 27th September 1911: remains of several turnip-flea beetles (*Phyllotreta undulata*); remains of 1 weevil (?); remains of 1 larva (*Coleoptera*); seeds—6 deadnettle (*Lamium* sp.); fragments of moss and decomposed vegetable matter.
119. Male; Craibstone, Aberdeenshire; 18th November 1911: piece of skin of a caterpillar; remains of 5 larvæ (*Coleoptera*); larva of a Dipteran; 2 heads of rove beetles; fragments of 2 insects; 1 spangle gall (? *Spathogaster baccarum* off an oak leaf); 8 forceps of earwigs; decomposed vegetable matter.
120. Sex (?); Craibstone, Aberdeenshire; 18th November 1911: content consisted almost entirely of decomposed vegetable matter; fragments of 3 beetle larvæ; 1 larva of a Dipteran (*Muscidæ*); head of rove beetle; 5 forceps of earwigs.
121. Male; Lynturk, Aberdeenshire; 7th February 1912: remains of 1 Dipteran (*Borborus* sp.); content chiefly stones.

122. Male ; Alvah, Banffshire ; 30th November 1912 : fragments of a rove beetle ; 5 fragments of larvæ.
 123. Countesswells, Aberdeenshire ; 9th December 1912 : remains of corn grains ; 1 seed of spurrey (*Spergula arvensis*, var. *sativa*).
 124. One bird, examined 19th April 1911, was found empty.

Summary :—4 contained insects of injurious group ; 5, indifferent group ; 3, beneficial group ; 3, seeds ; 2, galls ; 2, grain.

GOLDEN-CRESTED WREN (*Regulus cristatus*, K. L. Koch).

125. Sex (?) ; Mull of Galloway Lighthouse ; 25th April 1911 : quite empty.

WILLOW WREN (*Phylloscopus trochilus*, Linn.).

126. Nestling ; Lynturk, Aberdeenshire ; 5th July 1911 : filled with sand and stones ; a few hairs of some animal (? horse).

HEDGE SPARROW (*Accentor modularis*, Linn.).

127. Female ; Nairn, Nairnshire ; 13th January 1911 : seeds—12 spurrey (*Spergula arvensis*, var. *sativa*), 2 knot-grass (*Polygonum aviculare*), 2 Persicaria (*Polygonum Persicaria*), 1 orache (*Atriplex patula*) ; a few fragments of cereal.
 128. Male ; Ardclach, Nairnshire ; 11th May 1911 : fragments of weevils ; seeds—2 nutlets, ? deadnettle (*Lamium* sp.), 1 seed of a leguminous plant (? tare).
 129. Male ; Nairn, Nairnshire ; 16th June 1911 : seeds—35 seeds of a grass (? *Aira* sp.), 1 sheep-sorrel (*Rumex Acetosella*).
 130. Male ; Elgin, Morayshire ; 16th June 1911 : seeds—90 seeds of a grass (? *Aira* sp.), 1 spurrey (*Spergula arvensis*).
 131. Female ; Durris, Aberdeenshire ; 16th September 1911 : fragments of cereal ; fragment of a seed (?).
 132. Male ; Craibstone, Aberdeenshire ; 18th November 1911 : seeds—1 Persicaria (*Polygonum Persicaria*), 1 chickweed (*Stellaria media*), 4 fruits of buttercup (*Ranunculus* sp.) ; fragments of seeds.
 133. Female ; Craibstone, Aberdeenshire ; 18th November 1911 : seeds—9 Persicaria (*Polygonum Persicaria*), 4 fruits of buttercup (*Ranunculus* sp.), 1 chickweed (*Stellaria media*), 1 spurrey (*Spergula arvensis*) ; fragments of seeds.
 134. Female ; Scotston, Aberdeenshire ; 2nd January 1912 : seeds—3 sheep-sorrel (*Rumex Acetosella*), 1 wood cranesbill (*Geranium sylvaticum*) ; fragments of seeds ; decomposed vegetable matter ; fragments of chitin.
 135. Female ; Durris, Aberdeenshire ; 23rd January 1912 : seeds—2 sheep-sorrel (*Rumex Acetosella*), 5 common plantain (*Plantago major*), 3 seeds (*Labiata*) ; fragments of seeds.
 136. One bird, examined 13th January 1911, was found empty.

Summary :—9 contained seeds ; 2, cereal ; 1, insects of injurious group.

DIPPER (*Cinclus aquaticus*, Bechstein).

137. Male ; Nairn, Nairnshire ; 11th January 1911 : 1 whole and remains of a second beetle larva ; elytra of beetles (?) ; fragments of chitin.
 138. Male ; Skene, Aberdeenshire ; 6th August 1912 : fragments of 4 caddis-worm cases ; fragments of chitin.
 139. Female ; Skene, Aberdeenshire ; 6th August 1912 : remains of 1 caddis-worm and tube.

GREAT TITMOUSE (*Parus major*, Linn.).

140. Female; Nairn, Nairnshire; 11th January 1911: husks and fragments of cereal; leg of a weevil.
141. Sex (?); Scotston, Aberdeenshire; 2nd January 1912: fragments of 9 larvæ (? *Coleoptera*); remains of weevils (*Sitones* sp.); fragments of rove beetles; remains of 1 spider; fragments of cereal.
142. Male; Scotston, Aberdeenshire; 2nd January 1912: 4 larvæ of a Dipteron (*Dicranota* sp.); remains of weevils (*Sitones* sp.); remains of rove beetles; fragment of a spider; fragments of cereal.
143. Female; Dunecht, Aberdeenshire; 4th February 1912: 1 corn grain; fragments of cereal.

Summary:—4 contained cereal; 3, insects of injurious group; 2, indifferent group; 2, spiders.

COAL TITMOUSE (*Parus ater*, Linn.).

144. Female; Ardcloch, Nairnshire; 8th May 1911: remains of a spider; fragments of beetles; much-digested remains of 10 larvæ.
145. Sex (?); Craibstone, Aberdeenshire; 1st September 1911: fragments of vegetable matter (? seed coats); decomposed vegetable matter.

BLUE TITMOUSE (*Parus caeruleus*, Linn.).

146. Male; Craigdam, Aberdeenshire; 11th January 1911: fragments of cereal; a few crumbs of bread; fragments of chitin; fragment of skin of a larva.
147. Male; Ardcloch, Nairnshire; 11th May 1911: remains of 48 legs of beetles; fragment of the head of a weevil.
148. Male; Scotston, Aberdeenshire; 2nd January 1912: 1 beetle larva; fragments of 2 Dipterous larvæ; remains of 1 weevil (*Ceutorrhynchus* sp.); fragment of a millepede; decomposed vegetable matter.
149. Female; Scotston, Aberdeenshire; 2nd January 1912: fragments of weevils; 1 pupa case; remains of a Dipterous larva; decomposed vegetable matter.
150. Female; Scotston, Aberdeenshire; 2nd January 1912: 4 whole and remains of several Dipterous larvæ; 2 pupa cases; fragments of chitin; decomposed vegetable matter.
151. Female; Scotston, Aberdeenshire; 2nd January 1912: remains of 2 beetle larvæ; remains of several weevils (*Ceutorrhynchus* sp.); decomposed vegetable matter.
152. Male; Scotston, Aberdeenshire; 2nd January 1912: 1 whole and remains of several turnip-flea beetles (*Phyllotreta undulata*); larva of a Dipteron; 1 beetle larva; 1 Hemipteron (*Cimex* sp.); 4 fragments of vegetable matter.
153. Male; Craibstone, Aberdeenshire; 25th May 1912: filled with remains of small beetle larvæ; remains of a weevil (*Strophosomus coryli*).
154. One bird, examined 8th December 1912, was found empty.

Summary:—8 contained insects of indifferent group; 6, injurious group; 1, millepede; 1, cereal.

WREN (*Troglodytes parvulus*, K. L. Koch).

155. Female; Nairn, Nairnshire; 11th January 1911: filled chiefly with fragments of chitin; head of a weevil (*Sitones* sp.); 1 larva of a Dipteron; fragment of a spider.
156. Male; Shetland; 26th April 1911: remains of small crustaceans; seaweed.

157. Male; Shetland; 26th April 1911: remains of small crustaceans.
 158. Male; Shetland; 26th April 1911: remains of small crustaceans;
 9 small beetle larvæ.

Summary:—3 contained crustaceans; 2, insects of indifferent group;
 1, injurious group; 1, spider; 1, seaweed.

TREE-CREEPER (*Certhia familiaris*, Linn.).

159. Female; Nairn, Nairnshire; 11th January 1911: 1 corn grain; 1 gall
 from centre of bud of oak tree (*Andricus*); forceps of an earwig;
 fragments of 6 weevils (*Otiorrhynchus* sp.).

Summary:—Contained insects of injurious group.

PIED WAGTAIL (*Motacilla lugubris*, Temminck).

160. Female; Donmouth, Aberdeen; 10th April 1911: husks and frag-
 ments of grain; a few small pieces of potato; seeds—15 spurrey
 (*Spergula arvensis*), 1 chickweed (*Stellaria media*).
 161. Sex (?); Craibstone, Aberdeenshire; 8th June 1912: beetles (1
Aphodius ater, 3 *Homalota* sp.); 2 weevils (*Orchestes fagi*); Diptera
 (11 *Anthomyidæ*, 2 *Bibio* sp.).
 162. Female; Skene, Aberdeenshire; 6th August 1912: beetles (4
Aphodius contaminatus, 1 *Catops sericeus*); fragment of a Dipteron.

Summary:—2 contained insects of indifferent group; 2, injurious group;
 1, cereal; 1, potato; 1, seeds.

Field Note.—During June 1911 pied wagtails were watched daily feed-
 ing their young, and the food consisted chiefly of click beetles.

MEADOW-PIBIT (*Anthus pratensis*, Linn.).

163. Male; Craibstone, Aberdeenshire; 3rd August 1911: 39 endocarps,
 ? raspberry (*Rubus Idæus*); fragment of a weevil; 1 beetle
 (*Oxytelus rugosus*); head of beetle (?); remains of 1 crane-fly
 (*Tipulidæ*).
 164. Male; Kincorth, Kincardineshire; 12th December 1911: 1 rat-
 tailed maggot (larva of *Eristalis* sp.); 13 Dipterous larvæ; 1 larva
 of small moth (*Noctuidæ*); remains of 6 beetle larvæ; 1 spider
 (*Neriene* sp.); fragment of a weevil; 1 seed of sorrel (*Rumex*
Acetosa).
 165. Male; Murcar, Aberdeenshire; 26th December 1911: beetles
 (5 *Cercyon pygmaeus*, 1 *Longitarsus anchusæ*, 1 *Oxytelus rugosus*, 1
Tachyporus chrysomelinus, 1 *Limnebius truncatellus*); 1 larva of a
 ground beetle; 2 blood-worms (larvæ of *Chironomus*).

Summary:—2 contained insects of injurious group; 3, indifferent
 group; 1, beneficial group; 2, seeds.

SWALLOW (*Hirundo rustica*, Linn.).

166. Male; Portsoy, Banffshire; 6th September 1911: beetles (1 *Tachi-
 nus marginellus*, 1 *Helophorus rugosus*, remains of 16 *Loricera
 pilicornis*, 3 heads of beetles (?), 2 heads of rove beetles); fragments
 of 2 Diptera.
 167. Male; Durris, Aberdeenshire; 16th September 1911: remains of
 1 Hymenopteron (*Chalcididæ*); remains of 3 Diptera (1 *Empis* sp.,
 1 *Tipulidæ*, 1 *Borboridæ*); 1 beetle (*Aphodius contaminatus*).

Summary:—2 contained insects of indifferent group; 1, beneficial
 group; 2, injurious group.

GREENFINCH (*Ligurinus chloris*, Linn.).

168. Male; Elgin, Morayshire; 23rd February 1911: packed with fragments of cereal; seeds—9 sorrel (*Rumex* sp.), 1 embryo of a crucifer (? *Brassica* sp.).
169. Female; Elgin, Morayshire; 23rd February 1911: filled with fragments of cereal; seeds—5 spurrey (*Spergula arvensis*), 12 sorrel (*Rumex* sp.).
- 170-176. 3 females, 1 male, 3 sex (?); Elgin, Morayshire; 23rd February 1911: all seven were filled with corn grains and fragments of husks and grains.
177. Sex (?); Elgin, Morayshire; 23rd February 1911: remains of 14 partly digested seeds, 1 sheep-sorrel (*Rumex Acetosella*).
178. Female; Elgin, Morayshire; 23rd February 1911: fragments of seeds; fragments of cereal.
179. Female; Ardlach, Nairnshire; 11th May 1911: 3 corn grains; fragments of grain; fragments of 2 small weevils.
180. Female; Craibstone, Aberdeenshire; 5th June 1911: 3 Dipterous larvæ; remains of 1 beetle larva; fragments of 3 larvæ (?); 29 seeds of a garden primrose (*Primulaceæ*).
181. Female; Nairn, Nairnshire; 16th June 1911: a few fragments of cereal.
182. Male; Elgin, Morayshire; 16th June 1911: 12 embryos of a rosaceous plant (? *Rosa* sp.); fragments of embryos.
183. Male; Craibstone, Aberdeenshire; 25th July 1911: seeds—31 mouse-ear chickweed (*Cerastium* sp.), 17 charlock (*Brassica sinapistrum*); 163 fragments of small green seeds (?).
184. Male; Milltimber, Aberdeenshire; 3rd August 1911: fragments of cereal; 1 seed of spurrey (*Spergula arvensis*); 39 aphids (*Aphis* ? *granaria*).
185. Male; Milltimber, Aberdeenshire; 3rd August 1911: fragments of cereal; 34 seeds of spurrey (*Spergula arvensis*); 1 aphid (*Aphis* ? *granaria*).
186. Male; Milltimber, Aberdeenshire; 3rd August 1911: a few fragments of cereal; 8 aphids (*Aphis* ? *granaria*).
187. Sex (?); Durris, Aberdeenshire; 18th September 1911: 11 partly digested seeds, 1 sheep-sorrel (*Rumex Acetosella*); fragments of seeds.
188. Female; Craibstone, Aberdeenshire; 28th September 1911: 17 whole and remains of several embryos of a crucifer (? *Brassica sinapistrum*).
189. Male; Craibstone, Aberdeenshire; 7th October 1911: 72 seeds of sheep-sorrel (*Rumex Acetosella*); fragments of seeds.
190. Male; Craibstone, Aberdeenshire; 7th October 1911: 6 seeds of mouse-ear chickweed (*Cerastium* sp.); fragments of seeds.
191. Male; Craibstone, Aberdeenshire; 7th October 1911: seeds—8 mouse-ear chickweed (*Cerastium* sp.), 1 sheep-sorrel (*Rumex Acetosella*); fragments of seeds; head of a small weevil.
192. Sex (?); Craibstone, Aberdeenshire; 7th October 1911: fragments of cereal.
193. Sex (?); Scotston, Aberdeenshire; 7th November 1911: fragments of cereal.
194. Male; Scotston, Aberdeenshire; 7th November 1911: fragments of cereal; contents of 4 fruits of a sorrel (*Rumex* sp.).
195. Sex (?); Craibstone, Aberdeenshire; 11th November 1911: 3 whole and fragments of embryos of charlock (*Brassica sinapistrum*).
196. Sex (?); Craibstone, Aberdeenshire; 11th November 1911: 1 whole and fragments of embryos of charlock (*Brassica sinapistrum*).

197. Sex (?); Craibstone, Aberdeenshire; 11th November 1911: fragments of cereal; 1 embryo of charlock (*Brassica sinapistrum*).
198. Sex (?); Craibstone, Aberdeenshire; 11th November 1911; fragments of cereal; 1 whole and fragments of embryos of charlock (*Brassica sinapistrum*).
199. Sex (f); Scotston, Aberdeenshire; 14th November 1911: fragments of cereal; fragments of seeds.
200. Male; Scotston, Aberdeenshire; 2nd January 1912: seeds—38 partly digested seeds of sorrel (*Rumex* ? *Acetosa*), 10 mouse-ear chickweed (*Cerastium* sp.), 1 seed of a grass, 1 embryo of charlock (*Brassica sinapistrum*); fragments of seeds; a few fragments of chitin.
- 201, 202. Females; Parkhill, Aberdeenshire; 8th January 1912: both filled with embryos and fragments of embryos of a large-seeded crucifer, ? garden rocket (*Hesperis matronalis*).
203. Male; Maldon, Essex; 12th January 1912: packed with fragments of cereal; 4 ovaries of a dicotyledon, ? gooseberry.
204. Female; Maldon, Essex; 12th January 1912: fragments of cereal.
- 205-208. 2 males, 2 females; Maldon, Essex; 22nd January 1912: all filled with whole grains and fragments of grains of cereal. One contained also a few fragments of seeds.
- 209-214. 5 males, 1 female; Craibstone, Aberdeenshire; 6th February 1912: all filled with fragments of cereal.
215. Female; Craibstone, Aberdeenshire; 6th February 1912: 19 grains of corn; fragments of 2 seeds.
216. Male; Craibstone, Aberdeenshire; 6th February 1912: seeds—275 mouse-ear chickweed (*Cerastium triviale*), 7 spurrey (*Spergula arvensis*); 5 fragments of seeds (*Polygonum* sp.); fragments of cereal.
217. Female; Craibstone, Aberdeenshire; 24th February 1912: seeds—11 mouse-ear chickweed (*Cerastium triviale*), 9 sorrel (*Rumex Acetosa*); fragments of seeds; fragments of cereal.
- 218, 219. Females; Craibstone, Aberdeenshire; 24th February 1912: filled with fragments of cereal. One contained a few fragments of chitin.
220. Male; Parkhill, Aberdeenshire; 6th March 1912: fragments of cereal.
221. Male; Craibstone, Aberdeenshire; 7th December 1912: fragments of chickweed leaves; 1 calyx of chickweed; fragments of cereal.
222. Male; Craibstone, Aberdeenshire; 7th December 1912: fragments of cereal; 1 seed of spurrey (*Spergula arvensis*).
- 223-225. 3 males; Craibstone, Aberdeenshire; 7th December 1912: all filled with fragments of cereal.
226. Male; Countesswells, Aberdeenshire; 9th December 1912: 7 seeds of spurrey (*Spergula arvensis*).
227. Male; Countesswells, Aberdeenshire; 9th December 1912: fragments of cereal.
- 228-245. 18 birds, examined 6th November 1912, were found empty. They were received during a snowstorm.

Summary:—45 contained cereal; 31, seeds; 5, insects of injurious group; 1, indifferent group.

Pellets of Greenfinches.—On two occasions, 29th August and 1st September 1911, pellets sent from Lynturk were examined, and insects of the injurious group were found in both cases.

1. 11 whole and remains of 47 seeds of mouse-ear chickweed (*Cerastium* ? *triviale*); remains of weevils (*Ceuthorrhynchus* sp.); elytra of a turnip-flea beetle (*Phyllotreta undulata*).

2. Fragments of seeds, ? mouse-ear chickweed; fragments of grass; remains of 3 weevils (*Ceuthorrhynchus* sp.); remains of a small fresh-water crustacean.

Field Notes.—On 4th July 1911 greenfinches were observed feeding on plants of the dandelion in seed, and on the day following a small flock were seen feeding on a clump of turnip seed. In August greenfinches were again seen on dandelion plants in seed.

These notes were made at Lynturk, Alford, Aberdeenshire.

HOUSE SPARROW (*Passer domesticus*, Linn.).

- 246, 247. 2 females; Nairn, Nairnshire; 11th January 1911: filled with whole grains and husks and fragments of grains of cereal.
- 248-250. 2 females, 1 male; Elgin, Morayshire; 23rd February 1911: filled with whole grains and husks and fragments of grains of cereal.
251. Female; Elgin, Morayshire; 23rd February 1911: 55 corn grains; husks and fragments of cereal; 1 seed of sheep-sorrel (*Rumex Acetosella*).
252. Male; Old Aberdeen; 7th April 1911: bread; fat.
253. Male; Locality (?); 10th April 1911: a few fragments of grass.
254. Female; Aberdeen; 2nd May 1911: fragments of white egg-shell.
255. Female; Nairn, Nairnshire; 16th June 1911: husks and fragments of cereal.
256. Female; Elgin, Morayshire; 16th June 1911: 7 corn grains; fragments of cereal.
- 257-265. 5 males, 4 females; Cluny, Aberdeenshire; 19th June 1911: filled with husks and fragments of cereal.
266. Female; Cluny, Aberdeenshire; 19th June 1911: husks of cereal; 1 harlequin fly (*Chironomus* sp.).
267. Male; Cluny, Aberdeenshire; 19th June 1911: husks of cereal; fragment of a beetle; pieces of white egg-shell.
268. Male; Skeabost, Skye; 23rd June 1911: 1 pupa (*Diptera*); fragment of an insect (?); fragments of cereal; seeds—2 sheep-sorrel (*Rumex Acetosella*), 2 ovaries (*Scirpus* sp.).
- 269-278. 7 males, 3 females; Mintlaw, Aberdeenshire; 28th June 1911: filled with grains and husks and fragments of grains of cereal.
279. Female; Mintlaw, Aberdeenshire; 28th June 1911: 2 corn grains; fragments of cereal; 1 seed of spurrey (*Spergula arvensis*).
280. Female; Mintlaw, Aberdeenshire; 28th June 1911: 5 corn grains; fragments of cereal; 1 fragment of chitin.
281. Male; Mintlaw, Aberdeenshire; 28th June 1911: a few fragments of cereal; seeds—3 spurrey (*Spergula arvensis*, var. *sativa*); 2 sheep-sorrel (*Rumex Acetosella*), 2 mouse-ear chickweed (*Cerastium* sp.).
282. Male; Mintlaw, Aberdeenshire; 28th June 1911: 10 corn grains; fragments of cereal; seeds—1 spurrey (*Spergula arvensis*, var. *sativa*), 1 nutlet (*Myosotis* sp.).
283. Male; Mintlaw, Aberdeenshire; 28th June 1911: 18 corn grains; fragments of cereal; 1 nutlet (*Myosotis* sp.).
284. Male; Mintlaw, Aberdeenshire; 28th June 1911: 3 corn grains; fragments of cereal; 1 seed of spurrey (*Spergula arvensis*, var. *sativa*).
285. Male; Mintlaw, Aberdeenshire; 28th June 1911: 15 corn grains; fragments of cereal; 1 seed of sheep-sorrel (*Rumex Acetosella*).
286. Male; Mintlaw, Aberdeenshire; 28th June 1911: 5 corn grains; fragments of cereal; 34 seeds of sheep-sorrel (*Rumex Acetosella*).

- 287-302. 15 females, 1 male; Mintlaw, Aberdeenshire; 13th July 1911: filled with grains and husks and fragments of grains of cereal.
303. Female; Bieldside, Aberdeenshire; 24th August 1911: husks of cereal; 1 seed of spurrey (*Spergula arvensis*); a piece of moss.
304. Female; Murcar, Aberdeenshire; 29th August 1911: 1 corn grain; fragments of cereal.
305. Male; Craibstone, Aberdeenshire; 14th October 1911: 12 corn grains; fragments of cereal.
- 306-308. 2 females, 1 male; Scotston, Aberdeenshire; 7th November 1911: filled with grains and fragments of grains of cereal.
309. Male; Scotston, Aberdeenshire; 7th November 1911: 7 corn grains; fragments of cereal; 14 seeds, too much digested for identification.
310. Male; Scotston, Aberdeenshire; 7th November 1911: 1 corn grain; fragments of cereal; 1 seed.
311. Male; Lynturk, Aberdeenshire; 11th November 1911: a few fragments of cereal.
- 312, 313. 2 males; Scotston, Aberdeenshire; 2nd January 1912: filled with grains and fragments of grains of cereal.
314. Male; Maldon, Essex; 12th January 1912: 120 ovaries of a wild grass, 1 seed of a wild grass, 31 seeds of goose-foot (*Chenopodium* sp.); 7 grains of wheat; fragments of cereal; fragment of an immature insect.
315. Male; Maldon, Essex; 12th January 1912: decomposed vegetable matter.
316. Female; Maldon, Essex; 12th January 1912: fragments of cereal.
317. Male; Maldon, Essex; 23rd January 1912: 18 grains of wheat; fragments of cereal.
318. Male; Countesswells, Aberdeenshire; 20th March 1912: 14 grains of corn; fragments of cereal.
319. Male; Craibstone, Aberdeenshire; 16th November 1912: fragments of cereal.
320. Male; Craibstone, Aberdeenshire; 7th December 1912: fragments of cereals; seeds—1 chickweed (*Stellaria media*), 1 grass (*Poa* sp.).
321. Male; Craibstone, Aberdeenshire; 7th December 1912: fragments of cereals.
- 322-326. 5 birds, examined 28th June 1911, 12th January 1912, and 5th March 1912, were found empty.

Summary.—72 contained cereal; 14, seeds; 1, grass; 1, moss; 4, insects of indifferent group; 2, egg-shell; 1, refuse.

CHAFFINCH (*Fringilla coelebs*, Linn.).

327. Female; Nairn, Nairnshire; 13th January 1911: seeds—174 chickweed (*Stellaria media*), 137 spurrey (*Spergula arvensis*), 10 black bindweed (*Polygonum Convolvulus*), 3 orache (*Atriplex ? patula*); fragments of thickened rhizome; remains of a weevil (*Sitones* sp.); remains of 1 Dipteron (*Dolichopodidae*); 1 pupa case.
328. Male; Nairn, Nairnshire; 13th January 1912: 4 fragments of cereal; seeds—4 spurrey (*Spergula arvensis*), 1 chickweed (*Stellaria media*).
329. Male; Nairn, Nairnshire; 13th January 1911: seeds—176 chickweed (*Stellaria media*), 37 spurrey (*Spergula arvensis*), 20 *Persicaria* (*Polygonum Persicaria*); fragment of a spider.
330. Sex (?); Elgin, Morayshire; 23rd February 1911: filled chiefly with small stones; a few fragments of cereal; a few fragments of seeds; fragment of a weevil.

331. Female; Elgin, Morayshire; 23rd February 1911: fragments of cereal; partly digested fruits of sheep-sorrel (*Rumex Acetosella*); 1 pupa case.
332. Female; Elgin, Morayshire; 23rd February 1911: fragments of cereal; seeds—1 spurrey (*Spergula arvensis*), 6 sorrel (*Rumex Acetosa*), 7 sheep-sorrel (*Rumex Acetosella*), 1 mouse-ear chickweed (*Cerastium* sp.).
333. Male; Elgin, Morayshire; 23rd February 1911: 10 corn grains; fragments of cereal; seeds—12 spurrey (*Spergula arvensis*), 2 chickweed (*Stellaria media*); fragments of seeds.
334. Male; Elgin, Morayshire; 23rd February 1911: 1 corn grain; fragments of spurrey seeds (*Spergula arvensis*).
335. Male; Elgin, Morayshire; 23rd February 1911: 2 corn grains; fragments of cereal; much-digested seeds (?); fragments of spurrey seeds.
336. Male; Elgin, Morayshire; 23rd February 1911: fragments of cereal; 7 seeds of spurrey (*Spergula arvensis*); fragments of seeds.
337. Male; Ardclach, Nairnshire; 11th May 1911: 2 corn grains; fragments of cereal; fragments of chitin.
338. Male; Cluny, Aberdeenshire; 17th June 1911: fragments of cereal.
339. Male; Cluny, Aberdeenshire; 17th June 1911: fragments of cereal; 2 seeds of chickweed (*Stellaria media*).
340. Male; Cluny, Aberdeenshire; 17th June 1911: fragments of cereal; part of head of weevil.
341. Male; Craibstone, Aberdeenshire; 5th September 1911: fragments of cereal; fragments of an insect.
342. Male; Scotston, Aberdeenshire; 10th November 1911: fragments of cereal; fragment of a beetle.
343. Male; Scotston, Aberdeenshire; 10th November 1911: fragments of cereal; seeds—3 spurrey (*Spergula arvensis*, var. *sativa*), 2 fruits of Persicaria (*Polygonum Persicaria*), 1 seed coat, 1 penny cress (*Thlaspi* sp.).
344. Male; Scotston, Aberdeenshire; 10th November 1911: 1 corn grain; fragments of cereal; 2 seeds of mouse-ear chickweed (*Cerastium* sp.).
345. Male; Scotston, Aberdeenshire; 10th November 1911: 4 corn grains; fragments of cereal; fragments of chitin.
346. Male; Scotston, Aberdeenshire; 10th November 1911: 9 corn grains; fragments of cereal; fragments of nutlets of hemp-nettle (*Galeopsis Tetrahit*).
347. Male; Scotston, Aberdeenshire; 10th November 1911: 13 seeds, probably knot-grass bare of pericarp (*Polygonum aviculare*); fragments of seeds.
348. Female; Scotston, Aberdeenshire; 10th November 1911: 8 corn grains; fragments of cereal; seeds—1 sheep-sorrel (*Rumex Acetosella*), 1 Persicaria (*Polygonum Persicaria*); fragments of seeds.
349. Female; Scotston, Aberdeenshire; 10th November 1911: 1 corn grain; fragments of cereal.
350. Female; Scotston, Aberdeenshire; 10th November 1911: fragments of cereal; fragments of seed coats; 2 heads of weevils.
351. Male; Scotston, Aberdeenshire; 16th November 1911: fragments of cereal; seeds—3 spurrey (*Spergula arvensis*), 1 hemp-nettle (*Galeopsis Tetrahit*); fragments of seeds; remains of 2 weevils; remains of 1 beetle (*Elateridae*).
352. Female; Scotston, Aberdeenshire; 16th November 1911: fragments of cereal; fragments of seeds (?); 1 weevil (*Sitones* sp.).
353. Female; Scotston, Aberdeenshire; 16th November 1911: fragments

- of cereal; seeds—26 spurrey (*Spergula arvensis*), 2 sorrel (*Rumex* ? *Acetosa*); fragment of a weevil.
354. Female; Scotston, Aberdeenshire; 16th November 1911: fragments of seeds.
355. Female; Scotston, Aberdeenshire; 16th November 1911: fragments of cereal; fragments of seeds.
356. Male; Craibstone, Aberdeenshire; 21st November 1911: 8 seeds of charlock (*Brassica sinapistrum*); fragments of seeds: egg of a snail.
357. Male; Craibstone, Aberdeenshire; 21st November 1911: fragments of cereal; fragments of seeds.
358. Female; Scotston, Aberdeenshire; 1st December 1911: seeds—13 spurrey (*Spergula arvensis*), 3 sheep-sorrel (*Rumex Acetosella*), 1 mouse-ear chickweed (*Cerastium* sp.); fragments of seeds.
359. Female; Scotston, Aberdeenshire; 1st December 1911: seeds—21 spurrey (*Spergula arvensis*), 3 mouse-ear chickweed (*Cerastium* sp.), 2 ? sheep-sorrel (*Rumex Acetosella*); fragments of seeds; remains of a pupa case.
360. Female; Scotston, Aberdeenshire; 1st December 1911: seeds—3 ? sheep-sorrel (*Rumex Acetosella*), 2 Persicaria (*Polygonum Persicaria*); fragments of seeds.
361. Male; Scotston, Aberdeenshire; 1st December 1911: seeds—14 mouse-ear chickweed (*Cerastium* sp.), 1½ spurrey (*Spergula arvensis*); fragments of seeds.
362. Male; Scotston, Aberdeenshire; 1st December 1911: seeds—19 spurrey (*Spergula arvensis*), 11 mouse-ear chickweed (*Cerastium* sp.), 4 Persicaria (*Polygonum Persicaria*), 3 sorrel (*Rumex Acetosa*), 3 hemp-nettle (*Galeopsis Tetrahit*); fragments of seeds; fragment of a spider.
363. Male; Scotston, Aberdeenshire; 1st December 1911: 2 seeds, (?) sheep-sorrel (*Rumex Acetosella*); fragments of seeds.
364. Male; Scotston, Aberdeenshire; 1st December 1911: seeds—7 spurrey (*Spergula arvensis*), 1 ? sheep-sorrel (*Rumex Acetosella*); fragments of seeds.
365. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—67 spurrey (*Spergula arvensis*), 41 sorrel (*Rumex Acetosa*); fragments of seeds.
366. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—49 spurrey (*Spergula arvensis*), 8 sorrel (*Rumex Acetosa*), 1 mouse-ear chickweed (*Cerastium* sp.); fragments of seeds.
367. Male; Kincorth, Kincardineshire; 12th December 1911: seeds—57 spurrey (*Spergula arvensis*), 33 Persicaria (*Polygonum Persicaria*), 29 sorrel (*Rumex* ? *Acetosa*, altered by digestion), 4 mouse-ear chickweed (*Cerastium* sp.); fragments of seeds; 2 pupa cases; 1 larva of a Dipteron; 1 larva (?).
368. Female; Scotston, Aberdeenshire; 2nd January 1912: seeds—40 spurrey (*Spergula arvensis*), 5 ovaries of a grass, 3 sorrel (*Rumex* ? *Acetosa*), 1 hemp-nettle (*Galeopsis Tetrahit*); fragments of seeds; 1 larva of a Dipteron; fragments of a weevil (*Sitones* sp.).
369. Female; Scotston, Aberdeenshire; 2nd January 1912: seeds—7 spurrey (*Spergula arvensis*), 6 sorrel (*Rumex* sp.), 4 sheep-sorrel (*Rumex Acetosella*), 4 embryos of charlock (*Brassica* ? *sinapistrum*), 2 sorrel (*Rumex Acetosa*), 2 violet (*Viola* sp.), 1 hemp-nettle (*Galeopsis Tetrahit*), 1 mouse-ear chickweed (*Cerastium* sp.); fragments of seeds; 1 larva of a Dipteron; remains of 2 spiders; 3 weevils (*Sitones* sp.).
370. Male; Scotston, Aberdeenshire; 2nd January 1912: seeds—45 spurrey (*Spergula arvensis*), 6 ovaries of a small grass (? *Agrostis*

- sp.), 2 seeds (? *Polygonum* sp.), 1 sorrel (*Rumex* ? *Acetososa*); fragments of cereal; fragment of a spider; 6 heads of weevils (*Sitones* sp.); fragments of a beetle (?).
371. Male; Scotston, Aberdeenshire; 2nd January 1912: seeds—50 spurrey (*Spergula arvensis*), 7 ovaries of a small grass (? *Agrostis* sp.), 1 mouse-ear chickweed (*Cerastium triviale*); fragments of seeds; remains of 7 weevils (*Sitones* sp.); 1 pupa case; 3 larvæ of Diptera; remains of 2 small beetle larvæ.
372. Male; Scotston, Aberdeenshire; 2nd January 1912: seeds—19 violet (*Viola* sp.), 6 mouse-ear chickweed (*Cerastium* sp.), 3 sorrel (*Rumex Acetososa*), 2 seeds (*Polygonum* sp.), 1 sheep-sorrel (*Rumex Acetosella*), 1 hemp-nettle (*Galeopsis Tetrahit*); 2 pupa cases; 10 heads of weevils (*Sitones* sp.); 1 small beetle larva.
373. Male; Parkhill, Aberdeenshire; 8th January 1912: 3 embryos of a crucifer; fragments of seeds.
374. Male; Maldon, Essex; 23rd January 1912: fragments of seeds.
375. Male; Craibstone, Aberdeenshire; 6th February 1912: seeds—1 spurrey (*Spergula arvensis*), 1 mouse-ear chickweed (*Cerastium* sp.); fragments of spurrey seeds; fragments of cereal.
376. Male; Craibstone, Aberdeenshire; 6th February 1912: 1 seed of spurrey (*Spergula arvensis*); fragments of cereal.
377. Female; Craibstone, Aberdeenshire; 6th February 1912: seeds—11 mouse-ear chickweed (*Cerastium* sp.), 4 spurrey (*Spergula arvensis*), 3 orache (*Atriplex* ? *patula*); fragments of seeds; fragments of cereal.
378. Female; Craibstone, Aberdeenshire; 6th February 1912: a few fragments of seeds.
379. Female; Kincorth, Kincardineshire; 20th February 1912: 1 nutlet (*Myosotis* sp.); a few fragments of seeds.
380. Female; Kincorth, Kincardineshire; 20th February 1912: seeds—3 sorrel (*Rumex Acetososa*), 1 spurrey (*Spergula arvensis*); fragments of seeds.
381. Female; Craibstone, Aberdeenshire; 24th February 1912: 5 seeds of spurrey (*Spergula arvensis*); fragments of seeds; fragments of cereal.
382. Female; Lynturk, Aberdeenshire; 18th March 1912: fragments of cereal; a few fragments of seeds.
383. Male; Countesswells, Aberdeenshire; 20th March 1912: seeds—4 mouse-ear chickweed (*Cerastium* sp.), 1 hemp-nettle (*Galeopsis Tetrahit*); a few fragments of seeds; 1 pupa case; 1 weevil (*Sitones* sp.).
384. Male; Craibstone, Aberdeenshire; 25th May 1912: fragments of cereal; head of a weevil; fragments of a Dipteron.
385. Female; Countesswells, Aberdeenshire; 9th December 1912: fragments of cereal.
386. Female; Craibstone, Aberdeenshire; 9th December 1912: 7 seeds of mouse-ear chickweed (*Cerastium arvense*); 1 grain of corn.
- 387-390. Four birds, examined 16th June 1911 and 6th February 1912, were found empty.

Summary:—56 contained seeds; 42, cereal; 16, insects of injurious group; 16, indifferent group; 4, spiders; 1, egg of snail.

LINNET (*Linota cannabina*, Linn.).

391. Female; Scotston, Aberdeenshire; 28th November 1911: seeds—79 sheep-sorrel (*Rumex Acetosella*), 2 sorrel (*Rumex Acetososa*), 6 achenes of buttercup (*Ranunculus repens*), 2 ovaries of a grass, 1 seed (?); fragments of seeds.

392. Female ; Scotston, Aberdeenshire ; 28th November 1911 : seeds—100 sorrel (*Rumex Acetosa*), 49 sheep-sorrel (*Rumex Acetosella*), 16 mouse-ear chickweed (*Cerastium triviale*), 1 hoary plantain (*Plantago media*) ; fragments of seeds.
393. Female ; Scotston, Aberdeenshire ; 28th November 1911 : seeds—42 sorrel (*Rumex Acetosa*), 26 sheep-sorrel (*Rumex Acetosella*), 4 mouse-ear chickweed (*Cerastium triviale*) ; fragments of seeds.
394. Male ; Scotston, Aberdeenshire ; 28th November 1911 : 2 ovaries of a grass.
395. Male ; Craigdam, Aberdeenshire ; 17th August 1912 : 103 seeds of sorrel (*Rumex Acetosa*) ; fragments of seeds.

Summary :—5 contained seeds.

BULLFINCH (*Pyrrhula europæa*, Vieillot).

- 396-399. 2 males, 2 females ; Maldon, Essex ; 22nd January 1912 : all four shot among fruit trees, and in each case both crop and gizzard were packed with remains of buds of a woody plant, — probably fruit trees.
- 400, 401. 1 male, 1 female ; Maldon, Essex ; 23rd January 1912 : packed with fragments of buds,—probably of fruit trees.
- 402, 403. 1 male, 1 female ; Craibstone, Aberdeenshire ; 22nd January 1912 : filled with fragments of seeds.

Summary :—6 contained buds ; 2, seeds.

CROSSBILL (*Loxia curvirostra*, Linn.).

404. Female ; Nairn, Nairnshire ; 10th January 1911 : 382 seeds of a conifer ; fragments of sclerenchyma.
405. Male ; Nairn, Nairnshire ; 10th January 1911 : 503 seeds of a conifer ; fragments of sclerenchyma.
406. Male ; Nairn, Nairnshire ; 10th January 1911 : seeds of a conifer ; fragments of sclerenchyma.

Summary :—3 contained seeds and vegetable tissue.

CORN BUNTING (*Emberiza miliaria*, Linn.).

407. Female ; Craigdam, Aberdeenshire ; 13th April 1911 : fragments of grain ; 3 corn grains.
408. Male ; Craigdam, Aberdeenshire ; 13th April 1911 : 18 corn grains ; fragments of cereal ; elytra of beetle ; piece of skin of a larva.
409. Female ; Bridge of Don, Aberdeenshire ; 29th September 1911 : fragments of cereal ; skin of a spurrey seed.
410. Male ; Scotston, Aberdeenshire ; 2nd January 1912 : fragments of cereal ; remains of 1 weevil (*Sitones* sp.).
411. Female ; Scotston, Aberdeenshire ; 2nd January 1912 : seeds—46 seeds ? plantain (*Plantago* sp.), 9 husks of seeds ; fragments of seeds.
- 412-415. 1 male, 3 females ; Craigdam, Aberdeenshire ; 27th February 1912 : filled with ovaries of a grass ; a few grains and fragments of grains of cereal.
416. Female ; Craigdam, Aberdeenshire ; 27th February 1912 : 1 grain and fragments of grains of cereal ; 1 ovary and fragments of ovaries of a grass ; fragments of a weevil.
417. Male ; Craigdam, Aberdeenshire ; 17th August 1912 : husks and fragments of cereal ; remains of 2 weevils (*Barynotus* sp., *Sitones* sp.).

Summary :—11 contained cereal ; 7, seeds ; 3, insects of injurious group ; 1, indifferent group.

YELLOW BUNTING (*Emberiza citrinella*, Linn.).

- 418, 419. 1 male, 1 sex (?); Elgin, Morayshire; 23rd February 1911: filled with grains and fragments of husks and grains of cereal.
420. Sex (?); Elgin, Morayshire; 23rd February 1911: 20 corn grains; fragments of cereal; remains of 1 beetle larva; 1 maggot (*Diptera*); pupæ and maggots of a Dipteron. The pupæ and maggots were probably parasitic on some food the bird had pecked.
421. Female; Ardcloch, Nairnshire; 9th May 1911: 4 corn grains; fragments of cereal; fragments of weevils.
422. Female; Ardcloch, Nairnshire; 9th May 1911: filled with sand; 3 heads of weevils (*Hypera* sp., *Barynotus* sp.).
423. Sex (?); Craibstone, Aberdeenshire; 5th June 1911: fragments of a weevil; fragments of 3 larvæ; 4 egg cases of mollusc.
424. Male; Craibstone, Aberdeenshire; 5th June 1911: fragments of larvæ; fragments of insects; remains of weevils (8 *Sitones* sp., 1 *Barynotus* sp.); 3 beetles (2 *Melanotus rufipes*, 1 *Helophorus* sp.).
425. Female; Nairn, Nairnshire; 16th June 1911: 108 fruits of a small-fruited grass; wing of insect (*Hymenoptera*).
426. Sex (?); Nairn, Nairnshire; 16th June 1911: 1 corn grain; fragment of a weevil.
- 427, 428. 1 male, 1 female; Cluny, Aberdeenshire; 17th June 1911: husks and fragments of cereal.
429. Male; Skene, Aberdeenshire; 20th June 1911: 1 corn grain; 41 seeds of a grass (? *Lolium* sp.); fragments of cereal and of seeds; fragments of chitin.
430. Female; Mintlaw, Aberdeenshire; 13th July 1911: 23 corn grains; husks and fragments of cereal.
431. Male; Scotston, Aberdeenshire; 7th November 1911: fragments of cereal.
432. Female; Maldon, Essex; 23rd January 1912: 13 grains of wheat; fragments of cereal.
433. Male; Kincorth, Kincardineshire; 27th February 1912: 7 corn grains; fragments of cereal.
434. Male; Craibstone, Aberdeenshire; 7th December 1912: fragments of cereal.
435. Male; Craibstone, Aberdeenshire; 21st December 1912: 1 corn grain.
- Summary*.—14 contained cereal; 2, seeds; 5, insects of injurious group; 5, indifferent group; 1, egg cases of mollusc.

REED-BUNTING (*Emberiza schoeniclus*, Linn.).

436. Female; Craigdam, Aberdeenshire; 17th August 1912: 49 seeds of a grass (? *Agrostis* sp.); piece of the head of a small weevil; 3 shells of insect eggs; fragments of vegetable matter.

SNOW-BUNTING (*Plectrophenax nivalis*, Linn.).

437. Sex (?); Balgownie, Aberdeen; 21st November 1911: 77 parts of spikelets of a grass (? *Poa* sp.); seeds—11 mouse-ear chickweed (*Cerastium* sp.), 1 (*Brassica* sp.); 10 ovaries, probably of oat (*Avena elatior*); fragments of seeds.
438. Male; Balgownie, Aberdeen; 21st November 1911: 42 spikelets of a grass (? *Poa* sp.); 81 ovaries of a grass (?); 7 seeds of mouse-ear chickweed (*Cerastium* sp.); fragments of seeds.
439. Female; Balgownie, Aberdeen; 21st November 1911: 19 spikelets of a grass (? *Poa* sp.); 1 ovary of a grass; 10 ovaries, probably of

- oat (*Avena elatior*); 3 seeds of mouse-ear chickweed (*Cerastium* sp.); fragments of seeds.
440. Sex (?); Balgownie, Aberdeen; 21st November 1911: 36 parts of spikelets of a grass (? *Poa* sp.); 12 ovaries, probably of oat (*Avena elatior*); 7 ovaries of a grass; fragments of seeds.
441. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—54 knot-grass (*Polygonum aviculare*), 27 spurrey (*Spergula arvensis*), 20 plantain (*Plantago ? major*), 1 sheep-sorrel (*Rumex Acetosella*); fragments of seeds.
442. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—52 knot-grass (*Polygonum aviculare*), 21 plantain (*Plantago ? major*), 8 spurrey (*Spergula arvensis*); fragments of seeds.
443. Sex (?); Kincorth, Kincardineshire; 12th December 1911: seeds—53 plantain (*Plantago ? major*), 30 knot-grass (*Polygonum aviculare*), 3 spurrey (*Spergula arvensis*), 1 ovary of a small grass; fragments of seeds.
444. Sex (?); Kincorth, Kincardineshire; 12th December 1911: seeds—61 knot-grass (*Polygonum aviculare*), 85 spurrey (*Spergula arvensis*), 27 plantain (*Plantago ? major*), 1 fruit of a small grass, 36 much-digested seeds; fragments of seeds.
445. Male; Kincorth, Kincardineshire; 12th December 1911: seeds—98 knot-grass (*Polygonum aviculare*), 68 spurrey (*Spergula arvensis*), 9 plantain (*Plantago ? major*), 32 much-digested seeds; fragments of seeds.
446. Male; Kincorth, Kincardineshire; 12th December 1911: seeds—77 knot-grass (*Polygonum aviculare*), 18 spurrey (*Spergula arvensis*), 10 plantain (*Plantago ? major*), 1 ovary of a grass, 13 much-digested seeds; fragments of seeds.
447. Sex (?); Kincorth, Kincardineshire; 12th December 1911: seeds—69 knot-grass (*Polygonum aviculare*), 29 plantain (*Plantago ? major*), 2 fruits of a small grass; fragments of seeds.
448. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—54 knot-grass (*Polygonum aviculare*), 4 plantain (*Plantago ? major*); fragments of seeds.
449. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—76 spurrey (*Spergula arvensis*), 61 knot-grass (*Polygonum aviculare*), 63 plantain (*Plantago ? major*), 23 much-digested seeds; fragments of seeds.
450. Male; Kincorth, Kincardineshire; 12th December 1911: seeds—93 knot-grass (*Polygonum aviculare*), 46 plantain (*Plantago ? major*), 18 spurrey (*Spergula arvensis*), 2 fruits of a grass, 1 sheep-sorrel (*Rumex Acetosella*), 13 much-digested seeds; fragments of seeds.
451. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—14 knot-grass (*Polygonum aviculare*), 5 seeds (?); fragments of seeds.
452. Sex (?); Kincorth, Kincardineshire; 12th December 1911: seeds—91 knot-grass (*Polygonum aviculare*), 80 plantain (*Plantago ? major*), 30 spurrey (*Spergula arvensis*), 22 fruits of a grass, 1 sheep-sorrel (*Rumex Acetosella*), 9 much-digested seeds.
453. Female; Kincorth, Kincardineshire; 12th December 1911: seeds—92 knot-grass (*Polygonum aviculare*), 57 spurrey (*Spergula arvensis*), 26 plantain (*Plantago ? major*), 15 much-digested seeds; a few pieces of grass; fragments of seeds.
454. Male; Kincorth, Kincardineshire; 12th December 1911: seeds—101 knot-grass (*Polygonum aviculare*), 54 spurrey (*Spergula arvensis*), 7 plantain (*Plantago ? major*), 79 much-digested seeds; fragments of seeds.

455. Male; Kincorth, Kincardineshire; 12th December 1911: seeds—64 knot-grass (*Polygonum aviculare*), 18 plantain (*Plantago ? major*), 3 much-digested seeds; fragments of seeds.
456. Sex (?); Murcar, Aberdeenshire; 26th December 1911: seeds—11 sheep-sorrel (*Rumex Acetosella*), 11 achenes of buttercup (*Ranunculus ? repens*), 3 fruits of orache (*Atriplex hastata*), 1 ovary, probably of oat; fragments of seeds.
457. Sex (?) Murcar, Aberdeenshire; 26th December 1911: seeds—23 achenes of buttercup (*Ranunculus ? repens*), 3 fruits of orache (*Atriplex hastata*); fragments of seeds; 3 pupa cases of Diptera.
458. Male; Murcar, Aberdeenshire; 26th December 1911. In the crop were found 53 blood-worms (larvæ of *Chironomus*); 1 weevil (*Apion hæmatodes*); 1 beetle (*Tachyporus hypnorum*); 11 pupa cases of Diptera; much-digested plant remains, probably rhizome of couch-grass (*Agropirum repens*). In the gizzard 1 seed of sheep-sorrel (*Rumex Acetosella*); decomposed vegetable matter.
459. Sex (?); Parkhill, Aberdeenshire; 8th January 1912: 33 seeds of rye-grass (*Lolium perenne*); 1 ovary of a grass; fragment of grass; fragments of seeds.
460. Sex (?); Parkhill, Aberdeenshire; 8th January 1912: seeds—3 raspberry (*Rubus Idæus*), 3 achenes of buttercup (*Ranunculus* sp.), 3 much-digested seeds (?), 4 husks of seeds; fragments of seeds; 3 pupa cases of Diptera.
461. Female; Aberdeen; 24th January 1912: decomposed vegetable matter.
462. Sex (?); Kincorth, Kincardineshire; 20th February 1912. In the crop were found 19 blood-worms (larvæ of *Chironomus*); 2 stone-fly larvæ; 16 small Dipterous larvæ; 3 pupa cases of Diptera; many ovaries of a small grass. In the gizzard 44 seeds of knot-grass (*Polygonum aviculare*); many ovaries of a small grass; 16 small Dipterous larvæ.
463. Female; Parkhill, Aberdeenshire; 6th March 1912: seeds—3 husks of seeds, 2 sheep-sorrel (*Rumex Acetosella*), 1 ovary of a grass; 1 seed of *Polygonum* sp.; fragments of seeds.

Summary:—26 contained seeds; 2, grass; 4, insects of indifferent group; 1, injurious group.

STARLING (*Sturnus vulgaris*, Linn.).

464. Male; Craigdam, Aberdeenshire; 13th January 1911: grass; 2 wire-worms; remains of 2 caterpillars.
465. Sex (?); Cove, Kincardineshire; 28th January 1911: 6 "leather-jackets" (larvæ of crane-fly); 37 pieces of skins of "leather-jackets"; fragments of beetles; grass; 1 seed of a grass.
466. Sex (?); Cove, Kincardineshire; 28th January 1911: 7 "leather-jackets"; 48 pieces of skins of "leather-jackets"; 1 larva of a Dipteron; 5 pupæ of a Dipteron; heads of 2 weevils; heads of 2 rove beetles; 2 flower-heads (?); seeds—1 knot-grass (*Polygonum aviculare*), 1 sheep-sorrel (*Rumex Acetosella*), 1 spurrey (*Spergula arvensis*), 1 grass (?); a few husks of cereal; grass.
467. Female; Craigdam, Aberdeenshire; 21st March 1911: 15 "leather-jackets"; 43 pieces of skins of "leather-jackets"; 1 snail (*Zua lubrica*); remains of elytra of several beetles; a few husks of cereal; a few fragments of leaves; a few pieces of grass.
468. Female; Craigdam, Aberdeenshire; 21st March 1911: 26 "leather-jackets"; 65 pieces of skins of "leather-jackets"; 2 weevils (*Barynotus schönherri*); abdomens of several beetles; 2 larvæ of ground

- beetles (*Carabidæ*); remains of a caterpillar (*Noctuidæ*); piece of grass.
469. Male; Craibstone, Aberdeenshire; 6th April 1911: 15 corn grains; husks and fragments of cereal; 4 "leather-jackets"; 10 pieces of skins of "leather-jackets"; 1 larva of a Dipteran; fragment of a spider; remains of 1 weevil (*Barynotus* sp.).
470. Male; Craibstone, Aberdeenshire; 6th April 1911: 4 "leather-jackets"; 27 pieces of skins of "leather-jackets"; remains of 2 spiders (? *Neriens* sp.); head of a rove beetle; head and thorax of a ground beetle (*Anchomenus* sp.); remains of a small bivalve (?); grass.
471. Male; Craigdam, Aberdeenshire; 13th April 1911: 1 snail (*Zua lubrica*); fragments of weevils; head of a rove beetle; a few husks and fragments of cereal.
472. Male; Craibstone, Aberdeenshire; 2nd May 1911: 25 pieces of skins of "leather-jackets"; 1 whole and fragments of several wire-worms; remains of 3 weevils (*Otiorrhynchus* sp.); head of a rove beetle.
473. Female; Aberdeen; 8th May 1911: 1 weevil (*Barynotus schönherri*); forceps of earwigs.
474. Male; Ardcloch, Nairnshire; 9th May 1911: fragments of beetles (*Bembidium* sp., *Pterostichus* sp.); pupa case of Dipteran; remains of an insect (*Diptera*); remains of skins of 30 caterpillars (*Noctuidæ*); 8 moulted skins of Tipulid larvæ; moss.
475. Female; Ardcloch, Nairnshire; 9th May 1911: 13 beetles (*Cryptohypnus riparius*); remains of 2 beetles (*Xantholinus* sp.); 2 weevils (*Barynotus schönherri*); 2 wire-worms; 1 larva; 46 pieces of skins of "leather-jackets"; 1 snail (*Zonites nitidulus*); a few husks of cereal.
476. Male; Ardcloch, Nairnshire; 9th May 1911: 1 beetle (*Philonthus æneus*); 3 heads of beetles (*Philonthus æneus*, 2 *Carabidæ*); head of a weevil (*Barynotus* sp.); fragments of chitin.
477. Male; Craigdam, Aberdeenshire; 26th May 1911: 9 whole and remains of 3 "leather-jackets"; beetles (3 *Philonthus laminatus*, 1 *Harpalus ruficornis*, 1 *Pterostichus niger*); 1 weevil (*Barynotus schönherri*); 1 Dipteran (*Bibio* sp.).
478. Male; Craibstone, Aberdeenshire; 14th June 1911: remains of 8 "leather-jackets"; 1 wire-worm; 10 weevils (*Barynotus schönherri*); 3 beetles (*Cryptohypnus riparius*); head of a rove beetle.
479. Female; Elgin, Morayshire; 16th June 1911: beetles (3 *Philonthus laminatus*, 2 *Loricera pilicornis*, 1 *Pterostichus* sp.); 3 weevils (*Sitones tibialis*); 1 beetle larva; remains of 2 Diptera (*Anthomyidæ*); 1 spider (*Ergatis latens*); 1 saw-fly larva.
480. Male; Elgin, Morayshire; 16th June 1911: beetles (2 *Cryptohypnus riparius*, 1 *Philonthus æneus*, 1 *Loricera pilicornis*, 1 *Pterostichus* sp., 3 heads of rove beetles); 2 heads of weevils (*Barynotus* sp., *Sitones* sp.); 1 Dipteran (*Geranomyia* sp.); grass.
481. Male; Skeabost, Skye; 23rd June 1911: 16 wire-worms; 3 beetle larvæ; beetles (2 *Cryptohypnus riparius*, 1 *Melanotus punctolineatus*, 1 *Pterostichus nigrita*); 1 snail (*Zua lubrica*).
482. Male; Port-Erral, Aberdeenshire; 14th September 1911: 7 whole and husks and fragments of grains of cereal; 14 seeds of common plantain (*Plantago major*); fragment of skin of a larva (? "leather-jacket"); fragments of 10 weevils.
483. Male; Port-Erral, Aberdeenshire; 14th September 1911: filled chiefly with husks and fragments of cereal; 2 corn grains; heads of 2 rove beetles; head of 1 ground beetle; fragments of 3 weevils; forceps of an earwig.

484. Male; Port-Errol, Aberdeenshire; 14th September 1911: 3 whole and husks and fragments of grains of cereal; 1 seed of chickweed (*Stellaria media*); fragments of a rove beetle; fragments of 4 weevils; grass.
485. Female; Port-Errol, Aberdeenshire; 14th September 1911: filled chiefly with husks of cereal; grass; seeds—1 spurrey (*Spergula arvensis*), 5 much-digested seeds; fragments of seeds; fragments of 10 weevils (*Sitones* sp.).
- 486-488. 2 females, 1 male; Port-Errol, Aberdeenshire; 14th September 1911: filled with husks of cereal and fragments of weevils.
489. Female; Port-Errol, Aberdeenshire; 14th September 1911: filled chiefly with husks and fragments of cereal; grass; remains of 4 weevils (*Otiorrhynchus* sp.); a few eggs of crane-fly.
490. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled chiefly with husks of cereal; 7 corn grains; fragmentary inflorescence of a small species of Compositæ; fragments of 3 weevils.
491. Male; Port-Errol, Aberdeenshire; 14th September 1911: fragments of husks of cereal; 1 seed of spurrey (*Spergula arvensis*); remains of 10 weevils (*Sitones* sp.); fragments of 3 rove beetles.
492. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled chiefly with husks of cereal; 1 seed of spurrey (*Spergula arvensis*); 1 ovary of a small grass; fragments of 6 weevils; fragment of a rove beetle.
493. Male; Port-Errol, Aberdeenshire; 14th September 1911: husks of cereal; 3 corn grains; remains of 6 flower-heads of a small species of Compositæ; remains of 1 weevil (*Otiorrhynchus* sp.).
494. Male; Port-Errol, Aberdeenshire; 14th September 1911: husks and fragments of cereal; seeds—7 too much digested for identification; remains of 4 flower-heads of a small species of Compositæ; heads of 2 weevils (*Otiorrhynchus* sp.); head of a rove beetle.
495. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled chiefly with husks of cereal; 10 corn grains; 1 cocoon of an ichneumon fly; remains of 2 weevils (*Barynotus* sp.).
496. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled with husks of cereal; 4 corn grains; 1 seed of knot-grass (*Polygonum aviculare*); forceps of an earwig; fragments of weevils.
497. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled with husks and fragments of cereal; fragments of 3 weevils; remains of 1 rove beetle.
498. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled with husks of cereal; 1 seed of Persicaria (*Polygonum Persicaria*); fragments of 3 weevils.
499. Male; Port-Errol, Aberdeenshire; 14th September 1911: filled with husks of cereal; 4 corn grains; fragments of 2 beetles; some decomposed animal matter.
500. Female; Port-Errol, Aberdeenshire; 14th September 1911: filled with husks of cereal; 10 corn grains; 1 weevil (*Sitones tibialis*); 6 heads of weevils; 2 heads of rove beetles; 1 cocoon of an ichneumon fly.
501. Female; Port-Errol, Aberdeenshire; 14th September 1911: husks of cereal; 1 seed of knot-grass (*Polygonum aviculare*); 17 heads of weevils (*Otiorrhynchus* sp.).
502. Male; Craibstone, Aberdeenshire; 7th October 1911: skin of a larva (?); fragments of 2 insects (?).
503. Female; Craibstone, Aberdeenshire; 7th October 1911: filled chiefly with remains of rowans (*Pyrus Aucuparia*); 7 rowan seeds; 1 larva of a Dipteron; 1 larva of a stone-fly; 1 beetle (*Ips quadripust*);

- elytra of turnip-flea beetle (*Phyllotreta undulata*); fragments of 2 weevils; remains of an ichneumon fly.
504. Male; Scotston, Aberdeenshire; 7th November 1911: beetles (7 *Notiophilus biguttatus*, 11 *Stenus similis*, 1 *Aphodius* sp.); 2 weevils (*Sitones puncticollis*); 2 heads of weevils; 1 Dipteron (*Celopa* sp.); fragments of 2 Diptera; 1 pupa of a Dipteron; 1 larva of a Dipteron; remains of skins of 2 caterpillars; remains of 1 spider; 1 snail (*Helix* ? *caperata*); decomposed vegetable matter.
505. Female; Scotston, Aberdeenshire; 7th November 1911: beetles (2 *Notiophilus biguttatus*, 1 *Helophorus rugosus*, 1 *Stenus* sp., 3 elytra of *Aphodius* sp.); head and thorax of a ground beetle; head of a rove beetle; fragments of 2 weevils (*Sitones* sp.); 5 Dipterous larvæ; 1 Dipteron (*Tetanocera* sp.); 1 pupa case of a Dipteron; remains of 3 earwigs.
506. Male; Scotston, Aberdeenshire; 7th November 1911: remains of 23 spiders (*Drassida*); 4 skins of larvæ (*Diptera*).
507. Male; Scotston, Aberdeenshire; 7th November 1911: beetles (7 *Notiophilus biguttatus*, 1 *Helophorus rugosus*, 3 *Aphodius contaminatus*); fragment of a weevil; remains of 4 pupa cases; remains of 4 Diptera (*Hylemia* sp.); 3 maggots (*Coleoptera*); 3 seeds of knot-grass (*Polygonum aviculare*); husks of cereal.
508. Male; Scotston, Aberdeenshire; 7th November 1911: fragments of 93 spiders; 1 larva of a Dipteron; 4 small pieces of potato; a few husks of cereal.
509. Male; Scotston, Aberdeenshire; 7th November 1911: beetles (1 *Helophorus æneipennis*, 1 *Aphodius punctatosulcatus*); weevils (1 *Otiorrhynchus atroapterus*, 2 *Sitones* sp.); 17 spiders (*Nerienne bicolor*); fragments of spiders; piece of skin of a caterpillar; remains of 3 earwigs; grass.
510. Male; Glen Livet, Banffshire; 7th November 1911: beetles (1 *Notiophilus biguttatus*, 1 *Megasternum boletophagum*, 1 *Tachinus obtusus*, 1 *Othius* ? *fulvipennis*); fragments of a weevil; 1 spider (*Nerienne bicolor*); 4 rowans (*Pyrus Aucuparia*); remains of rowans formed the bulk of the content; 15 rowan seeds were found in the intestine.
511. Female; Scotston, Aberdeenshire; 28th November 1911: 3 larvæ of a Dipteron (*Muscida*); grass.
512. Male; Scotston, Aberdeenshire; 28th November 1911: fragments of 2 spiders; a few husks of cereal; grass.
513. Male; Scotston, Aberdeenshire; 28th November 1911: grass; remains of 1 beetle (*Helophorus æneipennis*).
514. Male; Craibstone, Aberdeenshire; 2nd December 1911: beetles (10 *Xantholinus linearis*, 3 *Tachinus marginellus*, 2 *Tachyporus chrysomelinus*, 1 *Phyllodecta vitellina*, 1 *Megasternum boletophagum*); weevils (6 *Sitones puncticollis*, 1 *Barynotus schönherri*); spiders (1 *Ergatis latens*, remains of 1 ? *Drassida*, remains of 16 *Lycosida*, fragments of 26 ?); remains of 4 caterpillars (*Triphena* sp.); 3 maggots of a Dipteron; 1 barley grain; husks of cereal.
515. Male; Craibstone, Aberdeenshire; 2nd December 1911: beetles (12 *Xantholinus linearis*, 1 *X. punctulatus*, 3 *Tachyporus chrysomelinus*, 3 *T. hypnorum*, 2 *Notiophilus aquaticus*, 1 *Ocytus cupreus*, 1 *Philonthus laminatus*, 1 *P. varius*, 1 *Nebria brevicollis*, 1 *Tachinus marginellus*); weevils (5 *Sitones puncticollis*, 1 *Barynotus schönherri*); 1 wire-worm; much-digested remains of 3 caterpillars; spiders (1 *Lycosa andrenivora*, 1 *Thomis* sp., fragments of 77 *Linyphiida*); seeds—2 spurrey (*Spergula arvensis*), 1 ovary of a small grass; decomposed vegetable matter.

516. Male; Kincorth, Kincardineshire; 12th December 1911: fragments of 2 Crustaceans (*Amphipoda*); remains of an earwig; piece of skin of a larva (?); a few husks of cereal; 4 fruits of birch (*Betula* sp.); tip of a shoot of ling (*Calluna vulgaris*); decomposed vegetable matter.
517. Female; Kincorth, Kincardineshire; 12th December 1911: 4 snails (*Limnaeus pereger*); 1 rat-tailed maggot (larva of *Eristalis*); forceps of 2 earwigs; 1 grub (?); skins of 7 Dipterous larvæ (*Tipulidæ*); 2 pupa cases of a Dipteran; remains of a caterpillar (*Noctuidæ*); remains of 4 wire-worms; remains of 2 ground beetle larvæ; beetles (1 *Deronectes duodecimpustulatus*, 1 *Helophorus rugosus*, remains of 5 rove beetles); head of a small weevil; fragment of a millipede; 1 Crustacean (*Gammarus locusta*).
518. Male; Kincorth, Kincardineshire; 12th December 1911: fragments of 6 Crustaceans (*Amphipoda*); 2 larvæ of a Dipteran; 1 beetle larva; remains of a ground beetle larva; 2 fruits of the birch (*Betula*); grass.
519. Male; Kincorth, Kincardineshire; 12th December 1911: 1 larva of a Dipteran.
520. Male; Kincorth, Kincardineshire; 12th December 1911: grass; 1 fruit of the birch (*Betula*); 1 flower-head of the tansy (*Senecio jacobea*); 1 grain husk.
521. Female; Kincorth, Kincardineshire; 12th December 1911: fragments of 2 larvæ; fragment of a Crustacean (*Amphipoda*); 2 fruits of the birch (*Betula*).
522. Female; Maldon, Essex; 20th December 1911: weevils (13 *Sitones puncticollis*, 9 *Sitones* sp., 31 heads of *Sitones*, 2 *Hypera nigriristris*, 1 *H. variabilis*, 6 heads of *Hypera* sp.); beetles (1 *Philonthus* sp., 1 *Ocyptus olens*, 1 *Quedius tristis*); 12 elytra of beetles; 2 heads of small rove beetles; 2 thoraces of click beetles; remains of 2 ground beetle larvæ; 2 Lepidopterous larvæ (? *Hepialid*); 2 ants (*Formicoxenus nitidulus*); 1 Hymenopteron (*Eurytoma hordei*); fragments of 3 spiders; a few husks of cereal; grass.
523. Female; Maldon, Essex; 20th December 1911: weevils (11 *Sitones puncticollis*, 9 *Sitones* sp., 31 heads of *Sitones*, 2 *Hypera nigriristris*, 1 *H. variabilis*, 6 heads of *Hypera* sp.); beetles (1 *Bembidium guttula*, 1 *Philonthus laminatus*, 2 *Longitarsus* sp., 1 *Stenus* sp., remains of 2 small rove beetles, 3 thoraces of click beetles); 3 ants (*Formicoxenus nitidulus*); fragments of 5 spiders; snails (2 whole and fragment of 1 *Zonites nitidulus*, 2 *Helix sericea*, 1 *H. rotundata*); 2 sprouted wheat grains; a few husks and fragments of cereal; grass.
524. Male; Maldon, Essex; 20th December 1911: weevils (3 heads of *Hypera* sp., 5 heads of *Sitones* sp., 2 abdomens of weevils; beetles (7 heads of rove beetles, 3 thoraces of click beetles, 10 fragments of beetles); fragments of 12 larvæ (*Coleoptera*); 1 snail (*Zonites nitidulus*); a few husks of cereal; decomposed vegetable matter.
525. Male; Murcar, Aberdeenshire; 26th December 1911: beetles (1 *Calathus melanocephalus*, 1 *Oxytelus rugosus*, 1 *Philonthus varius*, 1 *Stenus* sp., 1 *Oxyptoda* sp., 1 elytron of *Aphodius* sp., 9 heads of rove beetles); remains of 2 ground beetle larvæ; 4 blood worms (larvæ of *Chironomus*); 1 pupa case of a Dipteran; decomposed vegetable matter.
526. Male; Murcar, Aberdeenshire; 26th December 1911: beetles (1 *Megasternum bolotophagum*, 1 *Haliphus ruficornis*, 1 *Bembidium guttula*, 1 *Tachinus marginellus*, 3 heads of rove beetles); 1 weevil (*Apion radiolus*); 11 blood-worms (larvæ of *Chironomus*); 1 cocoon of an ichneumon fly; 4 forceps of earwigs; fragments of a spider.

527. Male; Murcar, Aberdeenshire; 26th December 1911: 7 larvæ of *Tanytus* sp.; remains of 2 beetle larvæ; remains of 1 ground beetle larva; 4 much-digested larvæ (?); 2 heads of rove beetles; abdomen of a weevil; 1 Lepidopterous larva (*Coleophora* sp.); 2 pupa cases of a Dipteran; 1 seed of knot-grass (*Polygonum aviculare*). The seed was found in the intestine.
528. Male; Murcar, Aberdeenshire; 26th December 1911: beetles (4 *Oxytelus rugosus*, 2 *Helophorus rugosus*, 2 *Tachyporus chrysomelinus*, 2 *Homalium rivulare*, 1 *Longitarsus anchusæ*, 1 *Cercyon pygmaeus*, 1 *C. melanocephalus*, 1 *Nebria brevicollis*, 3 heads of rove beetles); 1 weevil (*Ceuthorrhynchus alliaris*); fragment of a larva; 2 pupa cases of a Dipteran. In the intestine were found 1 weevil (*Otiorrhynchus picipes*), 7 beetles (2 *Oxytelus rugosus*, 2 *Tachyporus chrysomelinus*, 1 *Platystethus arenarius*, 1 *Stenus Juno*, 1 *Deronectes duodecimpustulatus*), and a fragment of a spider.
529. Male; Murcar, Aberdeenshire; 26th December 1911: beetles (2 *Notiophilus biguttatus*, 2 *Homalota* sp., 1 *Xantholinus linearis*, 1 *Longitarsus anchusæ*, 6 heads of rove beetles); 1 weevil (*Apion dichroum*).
530. Female; Parkhill, Aberdeenshire; 8th January 1912: beetles (1 *Hydrothassa aucta*, 1 *H. marginella*, 1 *Phædon tumidulus*, 3 *Helophorus rugosus*, 1 *Bembidium* sp., fragments of 1 ground beetle and of 2 rove beetles); 1 weevil (*Apion* sp.); fragments of a weevil; remains of 91 pupæ (*Diptera*); 1 larva of a Dipteran; 1 rat-tailed maggot (larva of *Eristalis*); 1 snail (*Helix rotundata*); seeds—1 ovary of a grass, 1 seed (? *Leguminosæ*).
531. Female; Parkhill, Aberdeenshire; 8th January 1912: beetles (2 *Cercyon pygmaeus*, 1 *Calathus melanocephalus*, 1 *Phædon tumidulus*, 1 *Tachinus rufipes*, 1 *Aphodius* sp., 1 *Bembidium* sp., remains of 3 rove beetles); fragment of a large weevil; remains of 12 pupæ (*Diptera*); 3 larvæ of *Diptera*; 1 rat-tailed maggot (larva of *Eristalis*); 1 snail (*Helix rotundata*).
- 532, 533. 2 males; Parkhill, Aberdeenshire; 15th January 1912: filled with decomposed vegetable matter. One contained a few small fragments of white egg-shell.
534. Male; Parkhill, Aberdeenshire; 15th January 1912: 1 larva of a Dipteran; a few fragments of moss.
535. Male; Parkhill, Aberdeenshire; 15th January 1912: fragments of several weevils; fragments of 3 spiders; decomposed vegetable matter.
536. Male; Parkhill, Aberdeenshire; 15th January 1912: 2 larvæ of a Dipteran; 2 weevils (*Sitones* sp.); remains of 5 beetles (*Helophorus rugosus*); 8 spiders (*Drassus* sp.); decomposed vegetable matter.
537. Female; Aberdeen; 24th January 1912: a few pieces of potato; grass; remains of weevils (*Sitones* sp.); decomposed animal matter.
538. Female; Aberdeen; 24th January 1912: fragments of a beetle; fragments of a beetle larva.
539. Female; Aberdeen; 24th January 1912: 9 spiders (*Neriene livida*); a piece of decomposed animal matter.
540. Male; Aberdeen; 24th January 1912: remains of a small crab (*Hyas* sp.); fragments of fish-bone.
541. Male; Aberdeen; 24th January 1912: remains of a small crab (*Hyas* sp.); remains of several marine worms.
542. Male; Aberdeen; 24th January 1912: fragments of Crustacea; a few grain husks.
- 543, 544. 2 males; Aberdeen; 24th January 1912: decomposed animal tissue.
545. Male; Murcar, Aberdeenshire; 6th February 1912: remains of

- crabs—6 *Hyas* sp., 5 edible crabs (*Cancer pagurus*), 1 crab (?); beetles (2 *Oxytelus rugosus*, 1 *Aphodius* sp., head of a rove beetle, 5 elytra of beetles); 1 weevil (*Otiorrhynchus picipes*); 6 Dipterous larvæ; 1 pupa case of a Dipteran; fragment of a seed.
546. Male; Murcar, Aberdeenshire; 6th February 1912: 1 snail (*Zua lubrica*); abdomen of a weevil; fragment of a spider; husks of cereal; a few pieces of potato; decomposed vegetable matter.
547. Female; Murcar, Aberdeenshire; 6th February 1912: filled with pieces of potato; 1 seed of knot-grass (*Polygonum aviculare*); remains of 1 weevil (*Barynotus* sp.); piece of a shell (*Littorina* sp.).
- 548-552. 5 females; Craibstone, Aberdeenshire; 6th February 1912: filled with whole grains and husks and fragments of grains of cereal.
553. Male; Craibstone, Aberdeenshire; 6th February 1912: husks and fragments of cereal; remains of 2 weevils (*Otiorrhynchus* sp., *Sitones* sp.); remains of a rove beetle; piece of skin of a larva.
554. Female; Craibstone, Aberdeenshire; 6th February 1912: filled with husks and fragments of cereal; seeds—7 spurrey (*Spergula arvensis*), 1 chickweed (*Stellaria media*), 1 *Persicaria* (*Polygonum Persicaria*), 3 ovaries of a grass. 1 seed of spurrey in the intestine.
555. Female; Craibstone, Aberdeenshire; 6th February 1912: filled with husks and fragments of cereal; seeds—3 spurrey (*Spergula arvensis*), 1 chickweed (*Stellaria media*), 1 rye-grass (*Lolium perenne*), 1 nutlet (*Myosotis* sp.); a few fragments of seeds.
556. Female; Craibstone, Aberdeenshire; 6th February 1912: filled with husks and fragments of cereal; 1 corn grain; seeds—16 spurrey (*Spergula arvensis*), 5 mouse-ear chickweed (*Cerastium* sp.), 5 knot-grass (*Polygonum aviculare*), 5 ovaries of a grass, 2 *Persicaria* (*Polygonum Persicaria*), 1 charlock (*Brassica sinapistrum*). In the intestine were found 16 seeds of spurrey, 3 mouse-ear chickweed, 2 knot-grass, and 1 nutlet (*Myosotis* sp.).
557. Female; Parkhill, Aberdeenshire; 13th February 1912: beetles (4 *Helophorus rugosus*, 1 *Trechus minutus*, 2 *Xantholinus linearis*, 70 elytra of *Helophorus* sp.); remains of 1 weevil (*Sitones* sp.); remains of 1 beetle larva; 1 larva of a Dipteran (*Tipulidæ*); 4 pupa cases of a Dipteran; 2 spiders (*Neriene ? nigra*); remains of earth-worms; a few husks of grain.
558. Female; Parkhill, Aberdeenshire; 13th February 1912: beetles (1 *Homalota vicina*, 1 *Tachinus subterraneus*, 32 elytra of *Helophorus* sp.); weevils (4 *Sitones* sp., 1 *Otiorrhynchus* sp., 1 *Hypera* sp.); 1 pupa case of a Dipteran; remains of earth-worms; a few husks of grain.
559. Female; Craibstone, Aberdeenshire; 24th February 1912: fragments of weevils; decomposed vegetable matter.
560. Male; Countesswells, Aberdeenshire; 20th March 1912: beetles (5 *Platystethus arenarius*, 2 *Aphodius fimetarius*, 1 *Bembidium guttula*, 2 heads of rove beetles); remains of 20 weevils (18 *Sitones* sp., 2 *Barynotus* sp.); 1 larva of a Dipteran; remains of a spider; moss. In the intestine was found 1 weevil (*Sitones* sp.).
561. Male; Countesswells, Aberdeenshire; 20th March 1912: beetles (1 *Cryptohypnus riparius*, head of rove beetle); weevils (5 *Sitones* sp., remains of 6 *Barynotus* sp.); decomposed vegetable matter.
562. Female; Countesswells, Aberdeenshire; 20th March 1912: beetles (1 *Bembidium guttula*, remains of small rove beetle); weevils (2 *Sitones* sp., remains of 9 *Sitones* sp., and of 8 *Barynotus* sp.); skins of 2 "leather-jackets"; remains of a beetle larva; 4 spiders (*Neriene ? livida*); remains of an earth-worm.
563. Male; Craibstone, Aberdeenshire; 8th June 1912: beetles (7

Philonthus laminatus, 1 *P. varius*, 3 *Cryptohypnus riparius*, 2 *Telephorus nigricans*, var. *discoideus*; a few husks of grain.

564. Male; Scotston, Aberdeenshire; 9th October 1912: whole grains and husks and fragments of grains of cereal; beetles (1 *Nebria brevicollis*, 1 *Tachyporus hypnorum*); 1 weevil (*Rhinoncus pericarpus*); 3 abdomens of weevils; remains of 3 Dipterous larvæ; remains of 1 caterpillar (*Noctuidæ*). In the intestine were found 1 beetle (*Notiophilus biguttatus*), head of a ground beetle, head of a weevil, and a larva of a Dipteron.
565. Female; Scotston, Aberdeenshire; 9th October 1912: 15 corn grains; husks of cereal; 1 caterpillar (*Triphaena pronuba*); remains of 2 beetles (*Aphodius fimetarius*); remains of a weevil (*Sitones* sp.); forceps of 10 earwigs.
566. Female; Scotston, Aberdeenshire; 9th October 1912: 8 whole grains and many husks and fragments of grains of cereal; 1 weevil (*Sitones* sp.); remains of 2 beetles (*Aphodius* sp., *Notiophilus* sp.); forceps of an earwig. In the intestine were found 2 weevils (*Sitones* sp.), 1 beetle (*Aphodius* sp.), and the head of a rove beetle.
- 567-570. Four birds, examined 21st March 1911 and 13th April 1911, were found empty.

Summary.—74 contained insects of injurious group; 61, indifferent group; 33, beneficial group; 19, spiders; 11, snails; 8, crustaceans; 3, earth-worms; 1, millepede; 49, cereal; 24, seeds; 15, grass; 3, potato; 2, rowans.

MAGPIE (*Pica rustica*, Scopoli).

571. Male; Craibstone, Aberdeenshire; 1st June 1912: husks and fragments of cereal; small pieces of potato; 1 weevil (*Barynotus schönherri*); remains of 4 beetles (*Helophorus rugosus*).
572. Female; Craibstone, Aberdeenshire; 1st June 1912: husks and fragments of cereal; fragments of beetles.

Summary.—2 contained cereal; 1, potato; 1, insects of indifferent group; 1, injurious group.

JACKDAW (*Corvus monedula*, Linn.).

573. Male; Elgin, Morayshire; 16th June 1911: filled with approximately equal quantities of grain husks and potato; fragments of beetles.
574. Male; Ardcloch, Nairnshire; 30th June 1911: filled chiefly with pieces of potato; a few husks of grain; 6 seeds of crowberry (*Empetrum nigrum*); remains of 5 weevils (*Barynotus* sp.); remains of 2 ground beetles (*Calathus melanocephalus*); 1 "leather-jacket"; 1 beetle larva; wings of a crane-fly (*Tipulidæ*); remains of 1 Dipteron (*Drosophila* sp.); fragments of 7 Diptera (*Muscidæ*); fragment of an insect (?).
575. Male; Ardcloch, Nairnshire; 30th June 1911: filled with husks of grain; a few pieces of potato; 11 cocoons of earthworm; fragments of chitin.

Summary.—3 contained grain; 3, potato; 1, seeds; 3, insects of indifferent group; 1, beneficial group; 1, injurious group; 1, cocoons of earthworm.

RAVEN (*Corvus corax*, Linn.).

- 576-578. 1 male; 1 female; 1 sex (?); Locality (?); 14th May 1912: all filled chiefly with decomposed animal matter; moss; grass; a few fragments of leaves.

CARRION-CROW (*Corvus corone*, Linn.).

579. Male; Craibstone, Aberdeenshire; 3rd April 1911: a few grain husks.
580. Female; Craibstone, Aberdeenshire; 3rd April 1911: pieces of turnip; husks and fragments of cereal; 51 corn grains; fragments of elytra of a beetle (?).
581. Female; Auchterless, Aberdeenshire; 23rd May 1911: remains of 1 "leather-jacket"; 1 seed of spurrey (*Spergula arvensis*); 2 ovaries of a grass; fragment of moss; grass.
582. Female; Don Mouth, Aberdeen; 18th July 1911: 6 corn grains and husks of grain; fragments of acorn shells; head and elytra of a small beetle; remains of 4 "leather-jackets"; 2 blood-worms (larvæ of *Chironomus*); 2 beetle larvæ (*Staphylinidae*); 15 fragments of larvæ (?); 1 egg-case of a dog whelk (*Purpura lapillus*).
583. Female; Dinnet, Aberdeenshire; 2nd May 1912: half filled with husks of grain.
584. Female; Dinnet, Aberdeenshire; 2nd May 1912: 3 grains of barley; husks of grain; weevils (3 *Sitones* sp., 2 *Otiorrhynchus* sp., 1 *Barynotus* sp.).
585. Female; Dinnet, Aberdeenshire; 2nd May 1912: 6 corn grains; a few fragments of grain; 2 beetles (*Agriotes obscurus*); piece of skin of a caterpillar.
586. Male; Parkhill, Aberdeenshire; 10th July 1912: pieces of potato; grass; remains of a wire-worm; remains of 1 weevil (*Barynotus* sp.); beetles (5 *Cercyon hæmorrhoidalis*, 5 *Cryptohypnus riparius*, 1 *Tachinus rufipes*); 3 Diptera (1 *Borborus* sp., 2 *Sphærocera* sp.); fragment of a bee.

Summary:—6 contained grain; 1, turnip; 1, seeds; 1, grass; 1, moss; 5, insects of injurious group; 3, indifferent group.

HOODED CROW (*Corvus cornix*, Linn.).

587. Female; Cove, Kincardineshire; 28th January 1911: 11 corn grains; husks and fragments of cereal; pieces of turnip; 23 littoral molluscs (*Littorina rudis*); fragments of shell.
588. Female; Craibstone, Aberdeenshire; 8th April 1911: a few husks of grain.
589. Female; Dinnet, Aberdeenshire; 15th May 1911: 3 pieces of turnip; a few pieces of grass.
590. Nestling; Dinnet, Aberdeenshire; 15th May 1911: 7 spiders (*Lycosa piratica*) and fragments of 5; fragments of rove beetles; fragments of ground beetles (*Pterostichus* sp.); fragments of aquatic beetle larvæ; fragments of dragon-fly larvæ.
591. Nestling; Dinnet, Aberdeenshire; 15th May 1911: the whole content was in tiny fragments; remains of 3 spiders; fragments of a beetle; moss.
592. Nestling; Dinnet, Aberdeenshire; 15th May 1911: fragments of 25 spiders; 1 beetle larva; fragments of ground beetles; remains of an earth-worm; moss; 2 small pieces of lichen (*Cladonia* sp.).
593. Female; Craibstone, Aberdeenshire; 12th June 1911: a few husks of cereal; a small piece of potato; fragments of 3 weevils.
594. Female; Sootston, Aberdeenshire; 28th November 1911: husks and fragments of cereal; decomposed animal matter.
595. Male; Kincorth, Kincardineshire; 12th December 1911: beetles (1 *Choleva spadicea*, 1 *Longitarsus anchusæ*); remains of 3 ground beetle larvæ; remains of 7 caddis-worms (3 *Limnophilus*

rhombicus); 2 stone-fly larvæ (1 *Pera* sp., 1?); 2 rat-tailed maggots (larvæ of *Eristalis* sp.); 2 sand-hoppers (*Talitrus locusta*); 1 acorn shell; fragments of shell.

Summary.—4 contained grain; 2, turnip; 1, potato; 2, moss; 1, grass; 3, insects of beneficial group; 3, indifferent group: 3, spiders; 1, earth-worm; 1, molluscs.

ROOK (*Corvus frugileus*, Linn.).

596. Male; Cove, Kincardineshire; 28th January 1911: 9 corn grains and 1 barley grain; husks and fragments of grain; small pieces of potato.
597. Male; Craigdam, Aberdeenshire; 18th March 1911: filled with pieces of turnip; 1 spurry seed (*Spergula arvensis*); remains of 4 wire-worms; 3 cocoons of earthworm; fragments of wood.
598. Female; Craibstone, Aberdeenshire; 3rd April 1911: 220 corn grains; husks and fragments of cereal; pieces of potato; remains of an earth-worm; 3 "leather-jackets" (larvæ of crane-fly); remains of 2 weevils (*Barynotus schönherri*).
599. Female; Craibstone, Aberdeenshire; 4th April 1911: 5 whole grains and fragments and husks of cereal; 1 beetle larva; fragment of an insect.
600. Female; Craibstone, Aberdeenshire; 8th April 1911: 77 corn grains; fragments and husks of cereal; 1 whole and 16 fragments of "leather-jackets"; larva of a weevil; remains of 1 ground beetle larva; 2 larvæ of a Dipteron; remains of several pupa cases of a Dipteron.
601. Female; Parkhill, Aberdeenshire; 11th April 1911: 92 corn grains; fragments and husks of cereal; remains of a weevil (*Barynotus* sp.); remains of a pupa case; 1 wire-worm; 1 beetle larva (*Telephorus fuscus*); 5 "leather-jackets"; 3 larvæ of a Dipteron.
602. Male; Parkhill, Aberdeenshire; 11th April 1911: 214 corn grains; fragments and husks of cereal.
603. Male; Parkhill, Aberdeenshire; 12th April 1911: 326 corn grains; fragments and husks of cereal: 2 weevils (*Barynotus schönherri*).
604. Male; Parkhill, Aberdeenshire; 12th April 1911: husks and fragments of cereal.
- 605, 606. 2 females; Craigdam, Aberdeenshire; 13th April 1911: whole grains and husks and fragments of cereal; fragments of weevils.
607. Female; Swordale, Ross-shire; 25th April 1911: 33 corn grains; fragments and husks of cereal; 4 molluscs (*Littorina rudis*); fragments of shells.
608. Male; Craibstone, Aberdeenshire; 1st May 1911: 25 corn grains; husks and fragments of cereal; remains of 9 "leather-jackets"; head of rove beetle; bud from a twig.
609. Male; Craibstone, Aberdeenshire; 12th May 1911: husks and fragments of cereal; remains of weevils.
610. Male; Craibstone, Aberdeenshire; 12th May 1911: 8 corn grains; husks and fragments of cereal; remains of 2 "leather-jackets"; 3 legs of a weevil.
611. Female; Craibstone, Aberdeenshire; 12th May 1911: 75 corn grains; remains of an earth-worm; 1 whole and remains of 12 "leather-jackets"; 1 larva of a Dipteron; 2 wire-worms.
612. Female; Craibstone, Aberdeenshire; 12th May 1911: 46 corn grains; fragments and husks of cereal; 3 whole and remains of 10 "leather-jackets"; head of rove beetle; abdomen of beetle (?).
- 613, 614. 1 male; 1 female; Cluny, Aberdeenshire; 23rd May 1911: small pieces of potato; husks of cereal; fragments of weevils.

615. Female; Cluny, Aberdeenshire; 23rd May 1911: remains of 53 "leather-jackets"; skin of a caterpillar (*Xylophasia* sp.); husks of cereal; a few pieces of moss; grass.
616. Female; Cluny, Aberdeenshire; 23rd May 1911: 26 corn grains; husks and fragments of cereal; pieces of potato; remains of 1 beetle (*Geotrupes stercorarius*); 1 whole and remains of 8 "leather-jackets."
617. Female; Cluny, Aberdeenshire; 23rd May 1911: 45 "leather-jackets"; 2 wire-worms; small pieces of potato; 3 clover leaves (*Trifolium repens*); moss.
618. Male; Cluny, Aberdeenshire; 23rd May 1911: 36 whole and remains of 22 "leather-jackets"; 1 weevil (*Barynotus schönherri*); 3 beetles (2 *Aphodius fimetarius*, 1 *Harpalus aeneus*); 92 corn grains; husks and fragments of cereal.
619. Male; Cluny, Aberdeenshire; 23rd May 1911: remains of 38 "leather-jackets"; 1 egg of a snail; husks of cereal.
620. Male; Cluny, Aberdeenshire; 23rd May 1911: 10 wire-worms; 6 ground beetle larvæ (*Pterostichus* sp.); 1 "leather-jacket"; remains of an earth-worm; 10 beetles (*Agriotes obscurus*); head of a weevil (*Barynotus* sp.); a few pieces of potato.
621. Male; Cluny, Aberdeenshire; 23rd May 1911: husks of cereal; potato; grass; remains of 5 "leather-jackets."
622. Male; Cluny, Aberdeenshire; 23rd May 1911: filled with pieces of potato; a few husks of cereal; remains of 3 "leather-jackets"; legs of a weevil.
623. Male; Cluny, Aberdeenshire; 23rd May 1911: filled with pieces of potato; a few husks of cereal; 2 larvæ of a Dipteron; fragment of a bee; remains of several click beetles (*Agriotes* sp.).
624. Male; Cluny, Aberdeenshire; 23rd May 1911: remains of 26 "leather-jackets"; husks of cereal.
625. Male; Cluny, Aberdeenshire; 23rd May 1911: filled with pieces of potato; a few husks of cereal; 2 wire-worms; remains of 3 "leather-jackets"; remains of 14 beetles (*Athous hæmorrhoidalis*); heads of 2 weevils (*Barynotus* sp.).
626. Male; Cluny, Aberdeenshire; 23rd May 1911: filled with pieces of potato; remains of 4 "leather-jackets"; remains of 1 beetle (*Cryptohypnus* sp.); heads of 2 weevils (*Barynotus* sp.).
627. Male; Cluny, Aberdeenshire; 23rd May 1911: filled chiefly with pieces of potato; 1 piece of turnip; husks and fragments of cereal; remains of 1 spider; remains of 30 "leather-jackets"; skins of 3 caterpillars (*Xylophasia* sp.); fragments of beetles.
- 628-631. 3 males; 1 female; Cluny, Aberdeenshire; 23rd May 1911: filled with husks of cereal and fragments of potato.
632. Male; Cluny, Aberdeenshire; 23rd May 1911: 13 corn grains; fragments and husks of cereal; pieces of potato; fragments of a weevil.
633. Male; Cluny, Aberdeenshire; 23rd May 1911: filled chiefly with whole grains and husks and fragments of cereal; 1 ground beetle larva; 1 "leather-jacket"; 1 weevil (*Otiorrhynchus picipes*).
634. Female; Cluny, Aberdeenshire; 23rd May 1911: 10 wire-worms; 1 "leather-jacket"; remains of 5 ground beetle larvæ; a few pieces of potato; a few husks of cereal.
635. Female; Cluny, Aberdeenshire; 23rd May 1911: remains of 29 "leather-jackets"; 3 Dipterous larvæ; 1 wire-worm; fragments of 2 weevils (*Barynotus* sp.); pieces of potato; 6 corn grains; husks and fragments of cereal.
636. Female; Cluny, Aberdeenshire; 23rd May 1911: pieces of potato; husks of cereal; 1 seed (*Polygonum* sp.); remains of 1 weevil (*Barynotus* sp.).

637. Female; Cluny, Aberdeenshire; 23rd May 1911: a few fragments of potato; remains of 3 weevils (*Barynotus* sp.); head of a beetle (*Cryptohypnus* sp.); 1 beetle larva; remains of 5 wire-worms.
638. Female; Cluny, Aberdeenshire; 23rd May 1911: pieces of potato; husks of cereal; fragments of 3 weevils.
- 639, 640. 1 male; 1 female; Skene, Aberdeenshire; 26th May 1911: a few pieces of potato; a few husks of cereal; in one also head of a weevil.
641. Male; Skene, Aberdeenshire; 26th May 1911: 4 whole and remains of 13 "leather-jackets"; a few pieces of grass.
- 642, 643. 1 male; 1 female; Skene, Aberdeenshire; 26th May 1911: a few husks of cereal; a few fragments of potato; fragments of weevils.
644. Male; Skene, Aberdeenshire; 26th May 1911: 71 eggs of crane-fly (*Tipulidæ*); remains of 15 "leather-jackets"; 1 whole and remains of 9 cocoons of earthworm; beetles (7 *Agriotes obscurus*, remains of 3 rove beetles); weevils (4 *Hypera polygoni*, 1 *Barynotus schönherri*, 1 *Sitones tibialis*, 1 *Tropiphorus tomentosus*); seeds—1 spurrey (*Spergula arvensis*), 1 sheep-sorrel (*Rumex Acetosella*), 1 hemp-nettle (*Galeopsis Tetrahit*); husks and fragments of cereal.
645. Male; Skene, Aberdeenshire; 26th May 1911: a few husks of cereal; a fragment of potato; fragment of a leaf; fragments of chitin.
646. Male; Skene, Aberdeenshire; 26th May 1911: 17 "leather-jackets"; 1 caterpillar (*Xylophasia* sp.); 2 weevils (*Barynotus schönherri*); fragments of 3 insects.
647. Male; Skene, Aberdeenshire; 26th May 1911: insects—43 Diptera (*Calliphora sepulchralis*), 2 Diptera (*Anthomyidæ*), 1 Dipteron (*Muscidae*), 1 saw-fly (*Athalia* sp.); 1 pupa case; 6 weevils (*Barynotus schönherri*); 8 "leather-jackets"; remains of several small earth-worms; potato; 2 sprouted corn grains.
648. Male; Skene, Aberdeenshire; 26th May 1911: 2 "leather-jackets"; remains of 3 Diptera (*Calliphora* sp.).
649. Male; Skene, Aberdeenshire; 26th May 1911: a few husks of cereal; 1 seed of sheep-sorrel (*Rumex Acetosella*); a few fragments of chitin.
650. Male; Skene, Aberdeenshire; 26th May 1911: a few fragments of potato; fragments of weevils.
651. Female; Skene, Aberdeenshire; 26th May 1911: filled with pieces of potato; a few husks of cereal; remains of a beetle (?); 1 "leather-jacket."
652. Female; Skene, Aberdeenshire; 26th May 1911: filled with potato; remains of a beetle (*Cryptohypnus* sp.); remains of 4 weevils (*Barynotus* sp.).
653. Female; Skene, Aberdeenshire; 26th May 1911: a few small pieces of potato; fragments of chitin.
654. Female; Skene, Aberdeenshire; 26th May 1911: potato; husks of cereal; remains of a beetle (*Geotrupes* sp.); fragment of a weevil.
655. Female; Skene, Aberdeenshire; 26th May 1911: husks of cereal; potato; fragment of a beetle.
656. Female; Skene, Aberdeenshire; 26th May 1911: potato; grass; remains of 64 "leather-jackets"; remains of 2 wire-worms; 2 weevils (*Barynotus schönherri*); 2 beetles (*Cryptohypnus riparius*); fragments of rove beetles.
657. Female; Skene, Aberdeenshire; 26th May 1911: 12 whole and remains of 31 "leather-jackets"; remains of a caterpillar (*Xylophasia* sp.); remains of an earth-worm; 2 beetles (*Philonthus laminatus*); 4 Diptera (*Calliphora sepulchralis*); fragment of a Dipteron (?); 1 grain and husks of cereal; potato.

658. Female; Skene, Aberdeenshire; 26th May 1911: potato husks of cereal; clover leaves (*Trifolium* sp.); 1 seed of sheep-sorrel (*Rumex Acetosella*); remains of 16 "leather-jackets"; remains of 2 rove beetles; 2 weevils (*Barynotus schönherri*).
659. Male; Skene, Aberdeenshire; 26th May 1911: potato; moss; remains of 15 "leather-jackets"; remains of 1 rove beetle (*Philonthus* sp.).
660. Male; Craigdam, Aberdeenshire; 26th May 1911: husks of cereal; potato; remains of 5 weevils (*Barynotus* sp.).
661. Female; Craigdam, Aberdeenshire; 26th May 1911: remains of 15 "leather-jackets"; leg of a weevil; grass; fragment of a leaf.
662. Sex (?); Craigdam, Aberdeenshire; 26th May 1911: fragment of an insect.
- 663, 664. 2 sex (?); Craigdam, Aberdeenshire; 26th May 1911: potato; husks of cereal; fragments of weevils.
665. Female; Skene, Aberdeenshire; 30th May 1911: 17 whole and remains of 3 "leather-jackets"; remains of 17 Diptera, (*Calliphora* sp.); 2 weevils (*Barynotus schönherri*); husks of cereal; a few clover leaves (*Trifolium* sp.); grass.
- 666-668. 2 females; 1 male; Skene, Aberdeenshire; 30th May 1911: pieces of potato.
- 669, 670. 2 females; Skene, Aberdeenshire; 30th May 1911: husks and fragments of cereal; potato; fragments of chitin.
671. Female; Skene, Aberdeenshire; 30th May 1911: remains of heads of 72 weevils (*Barynotus* sp.); 2 beetles (*Cryptohypnus riparius*); potato; husks of cereal.
672. Female; Skene, Aberdeenshire; 30th May 1911: remains of 14 "leather-jackets"; piece of skin of a caterpillar; a few fragments of potato; fragments of leaves (? clover); 1 seed of *Persicaria* (*Polygonum Persicaria*).
673. Female; Skene, Aberdeenshire; 30th May 1911: potato; a few husks and fragments of cereal; a few leaves of buttercups (*Ranunculus* sp.); remains of 16 "leather-jackets"; remains of earth-worms; 1 larva of a Dipteron; remains of a pupa case; beetles (3 *Philonthus laminatus*, 1 *Athous niger*).
674. Female; Skene, Aberdeenshire; 30th May 1911: potato; a few husks of cereal; grass; fragment of a weevil.
675. Female; Skene, Aberdeenshire; 30th May 1911: remains of 17 "leather-jackets"; 2 weevils (*Barynotus schönherri*); 1 beetle (*Philonthus laminatus*); 82 Diptera (*Calliphora sepulchralis*); potato.
676. Female; Skene, Aberdeenshire; 30th May 1911: 2 "leather-jackets"; remains of a weevil (*Barynotus* sp.); remains of an earth-worm; a few husks of cereal; potato; grass.
677. Female; Skene, Aberdeenshire; 30th May 1911: potato; grass; 1 seed of spurrey (*Spergula arvensis*); fragments of chitin; a few fragments of pale green egg-shell (?).
678. Female; Skene, Aberdeenshire; 30th May 1911: filled with potato; remains of two weevils (*Barynotus* sp.); part of head of beetle.
679. Female; Skene, Aberdeenshire; 30th May 1911: potato; 1 seed of spurrey (*Spergula arvensis*); remains of 39 "leather-jackets"; 2 weevils (*Barynotus schönherri*); fragments of beetles (water beetle, *Corymbites* sp.).
680. Male; Skene, Aberdeenshire; 30th May 1911: potato; piece of a clover leaf (*Trifolium* sp.); remains of a "leather-jacket"; elytron of a beetle; empty cocoon of earthworm.
681. Male; Skene, Aberdeenshire; 30th May 1911: a few small pieces of potato; a few pieces of grass; remains of a weevil (*Barynotus* sp.).
682. Male; Skene, Aberdeenshire; 30th May 1911: remains of 10

- "leather-jackets"; 1 beetle (*Philonthus politus*); potato; husks of cereal; remains of 12 wings of Diptera.
683. Male; Skene, Aberdeenshire; 30th May 1911: filled with stones; a few fragments of weevils (*Barynotus* sp.).
684. Male; Skene, Aberdeenshire; 30th May 1911: fragments of weevils; fragments of click beetles; remains of 1 "leather-jacket"; remains of an earth-worm.
685. Male; Skene, Aberdeenshire; 30th May 1911: heads of 10 weevils (*Otiorrhynchus* sp., *Barynotus* sp.); 1 whole grain and husks and fragments of cereal; potato.
686. Male; Skene, Aberdeenshire; 30th May 1911: remains of 13 "leather-jackets"; weevils (5 *Hypera polygona*, 8 *Barynotus* sp., 5 *Otiorrhynchus* sp.); beetles (2 whole and remains of 43 *Cryptohypnus riparius*, 2 *Xantholinus* sp.); husks of cereal.
687. Male; Skene, Aberdeenshire; 30th May 1911: 20 whole and remains of 19 "leather-jackets"; remains of 2 earth-worms; 1 spider (*Neriene bicolor*); 1 beetle (*Philonthus laminatus*); fragments of 4 Diptera (2 *Muscidae*, 2 ?); moss; grass.
688. Male; Skene, Aberdeenshire; 30th May 1911: potato; remains of 5 weevils (4 *Barynotus* sp., 1 *Hypera* sp.); remains of 2 rove beetles.
689. Male; Skene, Aberdeenshire; 30th May 1911: remains of 17 "leather-jackets"; remains of a weevil; remains of a click beetle; remains of a Dipteron (*Oscinidae*); 6 corn grains; a few husks of cereal.
690. Male; Skene, Aberdeenshire; 30th May 1911: potato; husks of cereal; 1 seed of spurrey (*Spergula arvensis*); fragments of chitin.
691. Sex (?); Skene, Aberdeenshire; 30th May 1911: 41 whole and remains of 8 "leather-jackets"; skin of a caterpillar (*Xylophasia* sp.); 2 beetles (*Melanotus rufipes*); thorax of a click beetle; fragments of 3 insects (?); clover leaf (*Trifolium* sp.).
692. Sex (?); Skene, Aberdeenshire; 30th May 1911: remains of 11 "leather-jackets"; remains of 2 weevils (*Barynotus* sp., *Otiorrhynchus* sp.); head of rove beetle; seeds—1 spurrey (*Spergula arvensis*), 1 field madder (*Sherardia arvensis*).
693. Sex (?); Skene, Aberdeenshire; 30th May 1911: 18 whole and remains of 8 "leather-jackets"; fragment of skin of a caterpillar; remains of a weevil; husks of cereal.
- 694-696. 3 sex (?); Skene, Aberdeenshire; 30th May 1911: potato; fragments of cereal; in each 1 weevil (*Barynotus schinherri*).
697. Sex (?); Skene, Aberdeenshire; 30th May 1911: potato; husks of cereal.
698. Sex (?); Skene, Aberdeenshire; 30th May 1911: remains of 20 "leather-jackets"; remains of 2 weevils (*Barynotus* sp.); a few fragments of husks of cereal.
699. Sex (?); Skene, Aberdeenshire; 30th May 1911: potato; remains of a weevil (*Otiorrhynchus* sp.).
700. Sex (?); Skene, Aberdeenshire; 30th May 1911: remains of 25 "leather-jackets"; remains of 9 weevils (*Barynotus* sp.).
701. Sex (?); Skene, Aberdeenshire; 30th May 1911: potato; remains of elytra of a beetle.
702. Sex (?); Skene, Aberdeenshire; 30th May 1911: decomposed vegetable matter; a few fragments of chitin.
703. Male; Craibstone, Aberdeenshire; 5th June 1911: remains of an earth-worm; remains of 12 weevils; husks of cereal.
704. Male; Craibstone, Aberdeenshire; 12th June 1911: potato; insects—Diptera (1 *Calliphora sepulchralis*, 21 *Anthomyia* sp.); fragments of several beetles; roots of grass.

705. Male; Nairn, Nairnshire; 15th June 1911: potato and husks of cereal in approximately equal quantities; weevils (5 *Barynotus schönherri*, 1 *Otiorrhynchus picipes*, 1 *Hypera polygoni*); beetles: (1 *Athous haemorrhoidalis*, 1 *A. niger*, 1 *Oxytelus rugosus*, 1 *Cryptohypnus riparius*); head of beetle (?); 1 ichneumon fly (*Ichneumon luctatorius*) and fragments of 2 ichneumon flies (?); remains of 4 Diptera (*Bibio* sp.).
706. Male; Nairn, Nairnshire; 15th June 1911: potato; a few husks of cereal; 5 weevils (*Barynotus schönherri*); 3 beetles (*Cryptohypnus riparius*); heads of click beetles and head of rove beetle; remains of 1 "leather-jacket"; remains of 1 earth-worm; fragment of moss.
707. Female; Elgin, Morayshire; 16th June 1911: potato; husks and fragments of cereal; remains of an earth-worm; remains of 2 weevils (*Sitones* sp.).
708. Male; Mintlaw, Aberdeenshire; 27th June 1911: 8 corn grains; fragments and husks of cereal; potato; seeds—1 sorrel (*Rumex* ? *Acetosa*), 2 nutlets (*Myosotis* sp.). The seeds were found in the intestine.
709. Male; Craibstone, Aberdeenshire; 3rd August 1911: fragments of a ground beetle; remains of 12 weevils (*Barynotus* sp.); fragments of chitin and broken elytra of beetles; remains of 2 ichneumon flies (?); 1 spider (*Epeira apoclista*); remains of grasshoppers; a large number of the eggs of crane-fly (*Tipulidae*).
710. Male; Craibstone, Aberdeenshire; 8th September 1911: fragments and husks of cereal; head of a dung beetle (*Aphodius* sp.); remains of 3 "leather-jackets"; 8 whole and remains of 3 larvæ of a Lamellicorn beetle; 3 larvæ of a Dipteron; 12 whole and remains of 7 grubs of a Dipteron.
711. Male; Durris, Aberdeenshire; 15th September 1911: 22 whole grains and fragments of cereal; fragment of an insect (?); many fragments of wings and legs of crane-fly; fragments of 2 weevils; 5 heads of beetles—3 ground beetle, 1 rove beetle, 1 dung beetle (*Aphodius* sp.); fragment of a spider; fragment of a seed (? small *labiate*).
712. Female; Craibstone, Aberdeenshire; 16th September 1911: 14 corn grains; fragments of cereal; remains of a weevil (*Otiorrhynchus* sp.).
713. Female; Craibstone, Aberdeenshire; 4th November 1911: potato; fragments and husks of cereal; 3 seeds of spurrey (*Spergula arvensis*). Two of the seeds were found in the intestine.
714. Male; Parkhill, Aberdeenshire; 5th December 1911: potato; 3 seeds of spurrey (*Spergula arvensis*) and fragments of seeds; 1 cocoon of earthworm; 2 cocoons of ichneumon flies. Half the content consisted of stones.
- 715, 716. 2 males; Aberdeen; 23rd January 1912: both packed with husks and a few fragments of cereal; in each the remains of an earth-worm and 1 whole and fragments of spurrey seeds (*Spergula arvensis*); in one the head of a beetle larva.
717. Male; Maldon, Essex; 23rd January 1912: packed with potato; 1 seed of goose-foot (*Chenopodium* sp.).
718. Female; Murcar, Aberdeenshire; 6th February 1912: packed with husks of cereal; 12 corn grains and a few fragments of grains.
719. Male; Craibstone, Aberdeenshire; 24th February 1912: filled chiefly with potato; a few pieces of turnip; a few husks of cereal; remains of an earth-worm; remains of 3 ground beetle larvæ.
720. Female; Countesswells, Aberdeenshire; 20th March 1912: potato; remains of earth-worms; pupa case of a Dipteron.
721. Male; Countesswells, Aberdeenshire; 20th March 1912: filled with pieces of turnip and a few pieces of potato.

722. Male; Countesswells, Aberdeenshire; 20th March 1912: 11 grains of barley; husks and fragments of cereal; remains of earth-worms.
723. Male; Countesswells, Aberdeenshire; 20th March 1912: larvæ—226 Dipterous larvæ (? *Bibio* sp.), 2 beetle larvæ (*Helophorus* sp.), 1 "leather-jacket," 1 wire-worm, 1 weevil larva (gen. et sp. ?); 2 pupa cases of Diptera; remains of an earth-worm; a few husks of cereal; a few pieces of turnip. 28 of the Dipterous larvæ were found in the intestine.
724. Male; Countesswells, Aberdeenshire; 22nd March 1912: potato; husks of cereal; remains of earth-worms; 1 dung beetle (*Aphodius fimetarius*); 2 wire-worms; Dipterous larvæ—8 *Muscidæ*, skins of 7 (?), 2 whole and remains of 2 (?).
725. Female; Craigdam, Aberdeenshire; 24th April 1912: filled with stones; a few fragments of cereal; a few fragments of chitin.
726. Female; Craigdam, Aberdeenshire; 24th April 1912: packed with husks and fragments of cereal; 36 fresh corn grains.
727. Female; Skene, Aberdeenshire; 25th April 1912: husks and fragments of cereal; remains of weevils (5 *Barynotus* sp., 2 *Otiorrhynchus* sp.).
728. Female; Skene, Aberdeenshire; 25th April 1912: fragments of cereal; 1 very young Noctuid larva.
729. Female; Skene, Aberdeenshire; 25th April 1912: 1 whole grain and husks and fragments of cereal; head of rove beetle; remains of 6 weevils (*Barynotus* sp.).
730. Male; Skene, Aberdeenshire; 25th April 1912: 38 corn grains; husks and fragments of cereal; remains of a rove beetle (*Philonthus* sp.).
731. Female; Skene, Aberdeenshire; 25th April 1912: 7 corn grains; husks and fragments of cereal; remains of 2 beetles (1 *Agriotes* sp., 1 head ?).
732. Female; Skene, Aberdeenshire; 25th April 1912: 15 barley grains; 7 corn grains; husks and fragments of cereal; 1 seed of *Persicaria* (*Polygonum Persicaria*); fragments of 2 weevils; piece of skin of a caterpillar.
733. Female; Skene, Aberdeenshire; 25th April 1912: 14 corn grains; remains of an earth-worm; decomposed vegetable matter.
734. Female; Skene, Aberdeenshire; 25th April 1912: fragments of chitin.
735. Female; Skene, Aberdeenshire; 25th April 1912: 4 wire-worms; skin of larva of a Dipteron; 3 click beetles (*Agriotes obscurus*); remains of 2 weevils (*Barynotus* sp.); a few husks of cereal.
736. Female; Skene, Aberdeenshire; 25th April 1912: 193 young caterpillars (? *Xylophasia* sp.); 1 whole and remains of 7 weevils (*Barynotus schönherri*); fragments of 4 spiders (*Drasidæ*); a few fragments and husks of cereal.
737. Female; Skene, Aberdeenshire; 25th April 1912: fragments of decayed leaves; a few pine needles; piece of skin of a caterpillar.
738. Female; Skene, Aberdeenshire; 25th April 1912: 23 corn grains; husks and fragments of cereal; 1 seed of black bindweed (*Polygonum Convolvulus*); 1 rove beetle (*Philonthus politus*) and fragments of a rove beetle.
739. Female; Skene, Aberdeenshire; 25th April 1912: 9 corn grains; husks and fragments of cereal; remains of 16 weevils (*Barynotus* sp.).
740. Female; Skene, Aberdeenshire; 25th April 1912: remains of earth-worms; a few pieces of grass.
- 741-743. 2 females; 1 male; Skene, Aberdeenshire; 25th April 1912: filled with whole grains and husks and fragments of grains of cereal; fragments of weevils (*Barynotus* sp.).

744. Male ; Skene, Aberdeenshire ; 25th April 1912 : 13 corn grains ; fragments of cereal ; 1 larva of a Dipteron.
- 745, 746. 2 females ; Skene, Aberdeenshire ; 25th April 1912 : filled with husks of cereal ; a few pieces of grass.
747. Female ; Skene, Aberdeenshire ; 25th April 1912 : 5 grains of barley ; husks of cereal ; a few pieces of grass ; a few pine needles ; piece of skin of a caterpillar.
748. Female ; Skene, Aberdeenshire ; 25th April 1912 : a small quantity of decomposed vegetable matter.
749. Male ; Skene, Aberdeenshire ; 25th April 1912 : 25 corn grains ; fragments and husks of cereal ; 1 piece of potato ; fragments of white egg-shell.
750. Female ; Skene, Aberdeenshire ; 25th April 1912 : 35 corn grains ; husks and fragments of cereal ; fragments of 3 click beetles ; head of rove beetle ; elytron of *Helophorus* sp. ; 1 weevil (*Sitones* sp.) ; 1 seed of spurrey (*Spergula arvensis*).
751. Female ; Skene, Aberdeenshire ; 25th April 1912 : 27 corn grains ; husks and fragments of cereal ; 3 beetles (*Agriotes obscurus*).
752. Female ; Skene, Aberdeenshire ; 25th April 1912 : 3 corn grains ; a few husks and fragments of cereal ; remains of 1 spider (*Lycosa* sp.) ; beetles (9 *Agriotes obscurus*, 1 *Quedius tristis*).
753. Female ; Skene, Aberdeenshire ; 25th April 1912 : remains of a wire-worm ; remains of a ground beetle larva.
754. Female ; Skene, Aberdeenshire ; 25th April 1912 : a few fragments of moss ; a few fragments of grass.
755. Female ; Skene, Aberdeenshire ; 25th April 1912 : 104 barley grains ; husks and fragments of cereal ; piece of a seed coat (? *Polygonum* sp.) ; 1 ground beetle larva (*Pterostichus* sp.).
756. Female ; Skene, Aberdeenshire ; 25th April 1912 : 27 corn grains ; fragments of cereal ; 1 beetle (*Staphylinus* sp.).
757. Female ; Skene, Aberdeenshire ; 25th April 1912 : 29 corn grains ; husks and fragments of cereal ; head of a ground beetle.
- 758-770. 12 females ; 1 male ; Skene, Aberdeenshire ; 25th April 1912 : all filled with whole grains and fragments and husks of grains of cereal.
771. Male ; Dinnet, Aberdeenshire ; 2nd May 1912 : 10 corn grains ; husks and fragments of grain ; 1 wire-worm (*Corymbites pectinicornis*) ; 1 beetle (*Calathus melanocephalus*) ; fragments of a beetle.
- 772, 773. 2 females ; Dinnet, Aberdeenshire ; 2nd May 1912 : both filled with whole grains and fragments and husks of cereal ; a few fragments of chitin.
774. Female ; Dinnet, Aberdeenshire ; 2nd May 1912 : 40 corn grains ; husks and fragments of cereal ; a few pieces of potato ; remains of a wire-worm.
775. Female ; Dinnet, Aberdeenshire ; 2nd May 1912 : 68 corn grains ; husks and fragments of cereal ; head of a beetle (?) ; head of a weevil (*Barynotus* sp.).
776. Female ; Dinnet, Aberdeenshire ; 2nd May 1912 : 6 corn grains ; husks and fragments of cereal ; 1 wire-worm ; 1 weevil (*Barynotus schönherri*) ; 10 click beetles (*Agriotes obscurus*).
777. Female ; Dinnet, Aberdeenshire ; 2nd May 1912 : 2 whole and remains of 66 weevils (*Barynotus schönherri*) ; 2 barley grains ; husks of cereal ; 1 seed of spurrey (*Spergula arvensis*).
778. Female ; Dinnet, Aberdeenshire ; 2nd May 1912 : packed with husks and fragments of cereal ; fragment of a rove beetle.
779. Female ; Dinnet, Aberdeenshire ; 2nd May 1912 : 3 corn grains ; husks and fragments of cereal ; remains of 2 weevils (1 *Barynotus* sp., 1 *Sitones* sp.) ; 1 beetle (*Cryptohypnus riparius*) ; fragments of a rove beetle.

- 780-782. 3 females; Dinnet, Aberdeenshire; 2nd May 1912: all filled with whole grains and husks and fragments of cereal; fragments of weevils.
783. Male; Parkhill, Aberdeenshire; 14th May 1912: husks and fragments of cereal; fragments of chitin.
784. Male; Parkhill, Aberdeenshire; 14th May 1912: 51 corn grains; fragments and husks of cereal; potato; wire-worms (2 *Agriotes* sp., 1 *Athous* sp.); fragments of beetles.
785. Male; Parkhill, Aberdeenshire; 14th May 1912: 4 corn grains; husks of cereal; remains of a wire-worm; fragments of weevils.
786. Male; Parkhill, Aberdeenshire; 14th May 1912: 25 corn grains; husks and fragments of cereal; fragments of a weevil.
787. Male; Parkhill, Aberdeenshire; 14th May 1912: 211 corn grains; husks and fragments of cereal; fragments of a weevil.
788. Male; Parkhill, Aberdeenshire; 14th May 1912: 17 corn grains; husks and fragments of cereal; 1 wire-worm (*Corymbites pectinicornis*); remains of 4 weevils (*Barynotus schönherri*).
789. Male; Craibstone, Aberdeenshire; 18th May 1912: packed with husks and fragments of cereal; 12 corn grains; fragments of a beetle.
790. Male; Craibstone, Aberdeenshire; 18th May 1912: packed with husks and fragments of grain; 6 corn grains; fragments of a weevil.
791. Male; Craibstone, Aberdeenshire; 18th May 1912: husks of grain; remains of a "leather-jacket"; 1 beetle (*Philonthus æneus*).
792. Male; Parkhill, Aberdeenshire; 21st May 1912: packed with husks and fragments of cereal; 3 corn grains; remains of beetles (1 *Geotrupes stercorarius*, 2 *Cryptohypnus riparius*, 1 rove beetle); remains of 3 weevils (*Barynotus schönherri*).
793. Male; Parkhill, Aberdeenshire; 21st May 1912: 1 whole and remains of 4 sawflies (*Tenthredinidae*); 1 piece of grass.
794. Female; Parkhill, Aberdeenshire; 21st May 1912: a few fragments of husks and of grains of cereal; 1 small piece of potato; fragment of a weevil.
795. Male; Parkhill, Aberdeenshire; 21st May 1912: potato; a few husks of grain.
- 796, 797. 1 female; 1 sex (?); Skene, Aberdeenshire; 28th May 1912: husks and fragments of cereal; potato; fragments of weevils.
798. Female; Skene, Aberdeenshire; 28th May 1912: husks and fragments of cereal; potato; 7 wire-worms (*Athous* sp.); fragments of weevils.
799. Male; Skene, Aberdeenshire; 28th May 1912: potato; a few husks of cereal; remains of 1 "leather-jacket."
800. Female; Skene, Aberdeenshire; 28th May 1912: husks and fragments of grain; fragments of chitin.
- 801-803. 2 males; 1 female; Skene, Aberdeenshire; 28th May 1912: all filled with husks of grain and small pieces of potato.
804. Female; Skene, Aberdeenshire; 28th May 1912: fragments of potato; a few pieces of grass.
805. Male; Skene, Aberdeenshire; 28th May 1912: fragments of potato; a few husks of cereal; fragments of a weevil; fragment of a beetle.
806. Male; Skene, Aberdeenshire; 28th May 1912: a few husks of cereal; fragments of a click beetle.
- 807-810. 3 females; 1 male; Skene, Aberdeenshire; 28th May 1912: all filled with husks and fragments of cereal.
- 811-815. 3 females; 2 males; Craibstone, Aberdeenshire; 1st June 1912: all filled with grains and husks and fragments of cereal; small pieces of potato; fragments of weevils (*Barynotus* sp.).

816. Male; Craibstone, Aberdeenshire; 1st June 1912: potato; 25 corn grains; a few fragments of grains; grass.
817. Male; Craibstone, Aberdeenshire; 1st June 1912: potato; remains of earth-worms; fragments of weevils (*Barynotus* sp.).
818. Female; Craibstone, Aberdeenshire; 1st June 1912: potato; 11 barley grains; fragments of cereal.
819. Female; Craibstone, Aberdeenshire; 1st June 1912: grass; fragments of weevils.
820. Female; Craibstone, Aberdeenshire; 1st June 1912: potato; 7 barley grains; husks and fragments of cereal; fragments of 12 weevils (*Sitones* sp.).
821. Female; Craibstone, Aberdeenshire; 1st June 1912: husks and fragments of cereal; fragments of chitin.
822. Female; Craibstone, Aberdeenshire; 8th June 1912: 1 grain husk; 1 piece of potato; a few fragments of chitin.
823. Male; Scotatun, Aberdeenshire; 12th June 1912: potato; a few husks of cereal.
824. Male; Countesswells, Aberdeenshire; 13th June 1912: a few husks of cereal; fragments of a weevil; fragments of egg-shell.
825. Male; Craibstone, Aberdeenshire; 22nd June 1912: fragments of a weevil (*Barynotus* sp.); a piece of vegetable fibre.
826. Female; Craibstone, Aberdeenshire; 22nd June 1912: potato; husks of cereal; grass; 3 weevils (*Barynotus schönherri*); 2 beetles (*Melanotus rufipes*).
827. Female; Craibstone, Aberdeenshire; 22nd June 1912: potato; husks of cereal; a few fragments of weevils.
828. Female; Craibstone, Aberdeenshire; 22nd June 1912: potato; husks of cereal; grass; fragments of leaves; remains of earth-worms; remains of a wire-worm; fragments of chitin.
829. Male; Craibstone, Aberdeenshire; 6th July 1912: potato; husks of cereal; grass; remains of 3 ground beetles; weevils (4 *Barynotus schönherri*, 2 *Sitones* sp.); remains of 1 ground beetle larva.
830. Male; Craibstone, Aberdeenshire; 6th July 1912: remains of weevils (12 *Barynotus* sp., 9 *Sitones* sp.); beetles (11 *Agriotes obscurus*, 3 *Philonthus laminatus*, 1 *Parnus prolifericornis*); remains of 1 ground beetle larva; husks of cereal; decomposed vegetable matter.
831. Male; Craibstone, Aberdeenshire; 9th July 1912: beetles (1 *Pterostichus niger*, 1 *Cryptohypnus riparius*); remains of an earth-worm; remains of 2 millepedes (*Polydesmus* sp.); remains of 2 weevils; fragment of a leaf.
832. Male; Craibstone, Aberdeenshire; 9th July 1912: potato; remains of earth-worms; 2 larvæ of ground beetles (*Pterostichus* sp.); 1 beetle (*Xantholinus* sp.); 1 larva of a Dipteron (*Muscidae*); remains of 1 millepede (*Polydesmus* sp.).
833. Male; Parkhill, Aberdeenshire; 10th July 1912: potato; fragment of a bee; 2 strips of rubber.
834. Male; Parkhill, Aberdeenshire; 10th July 1912: potato; 5 earwigs (*Forficula auricularia*); 3 ants (*Myrmica rubra*); weevils (1 *Barynotus schönherri*, 3 *Otiorrhynchus* sp.); beetles (1 *Geotrupes stercorearius*, 1 *Amara apricaria*).
835. Male; Craibstone, Aberdeenshire; 13th July 1912: remains of 10 ground beetles (*Pterostichus* sp.); fragments of 2 weevils; fragments of a bee; decomposed vegetable matter.
836. Male; Craibstone, Aberdeenshire; 20th July 1912: remains of earth-worms; remains of 2 saw-flies (*Tenthredo* sp.); remains of weevils (17 *Barynotus* sp., 1 *Sitones* sp.); head of a ground beetle; potato; 14 seeds of crowberry (*Empetrum nigrum*). In the inter-

- tine were found 15 seeds of crowberry, 3 sheep-sorrel (*Rumex Acetosella*); heads of weevils (3 *Barynotus* sp., 1 *Sitones* sp.).
837. Male; Craibstone, Aberdeenshire; 20th July 1912: potato; beetles (13 *Cryptohypnus riparius*, 3 *Helophorus rugosus*, 1 head of rove beetle); remains of 2 weevils (*Barynotus* sp.); 1 larva of beetle (*Silphidae*); remains of a Dipteron (*Dolichopus* sp.); 1 saw-fly larva (*Tenthredinidae*).
838. Sex (?); Countesswells, Aberdeenshire; 23rd July 1912: potato; a few husks of cereal; seeds—84 achenes of strawberry, 1 mouse-ear chickweed (*Cerastium triviale*); remains of 7 weevils (*Sitones* sp.); head of rove beetle; head of ground beetle; 6 frog-hoppers (*Philænus spumarius*). In the intestine were found 25 achenes of strawberry and 2 heads of weevils.
839. Female; Countesswells, Aberdeenshire; 23rd July 1912: potato; remains of strawberries; 673 achenes of strawberry; grass; fragments of leaves; fragment of a bee; 11 frog-hoppers (*Philænus spumarius*). In the intestine were found 200 achenes of strawberry; remains of 3 frog-hoppers; 3 larvæ of weevils (gen. et sp. ?)
840. Male; Countesswells, Aberdeenshire; 23rd July 1912: filled chiefly with remains of strawberries; 742 achenes of strawberry; potato; grass; fragment of a bee; 29 frog-hoppers (*Philænus spumarius*); 2 weevils (*Sitones* sp.); 2 beetles (*Tachinus rufipes*); remains of a shrew. 207 achenes of strawberry in the intestine.
841. Male; Countesswells, Aberdeenshire; 23rd July 1912: potato; grass; 11 achenes of strawberry; abdomen of a weevil; remains of a frog-hopper. In the intestine were found 30 achenes of strawberry; 1 beetle (*Cryptohypnus riparius*).
842. Male; Countesswells, Aberdeenshire; 23rd July 1912: packed with pieces of strawberry; 20 frog-hoppers (*Philænus spumarius*); 1 Hemipteron (*Nabis rugosus*); beetles (4 *Pterostichus niger*, 1 *Calathus melanocephalus*); 2 weevils (*Sitones* sp.). In the intestine were found 162 achenes of strawberry; 1 frog-hopper; head of ground beetle (*Pterostichus* sp.).
843. Male; Craibstone, Aberdeenshire; 27th July 1912: 1195 seeds of crowberry (*Empetrum nigrum*); grass; remains of earth-worms; 97 eggs of crane-fly (*Tipulidae*); remains of a weevil (*Barynotus* sp.); 1 beetle (*Calathus cisteloides*); 4 heads of rove beetles; fragment of a bee.
844. Male; Countesswells, Aberdeenshire; 30th July 1912: remains of earth-worms; remains of 6 crane-flies (*Tipula oleracea*); 107 eggs of crane-fly; 2 beetles (*Calathus cisteloides*); seeds—6 rye-grass (*Lolium perenne*), 3 spurrey (*Spergula arvensis*). 31 eggs of crane-fly in the intestine.
845. Male; Parkhill, Aberdeenshire; 30th July 1912: potato; husks of cereal; 1 seed of sheep-sorrel (*Rumex Acetosella*); 43 eggs of crane-fly; beetles (7 *Aphodius fimetarius*, 1 *Cryptohypnus riparius*, heads of 2 rove beetles, head of 1 ground beetle); weevils (2 *Sitones* sp., 1 *Barynotus* sp., 1 *Otiorrhynchus* sp.).
846. Female; Parkhill, Aberdeenshire; 30th July 1912: potato; a few husks of cereal; remains of 2 wire-worms; 1 "leather-jacket"; weevils (2 *Otiorrhynchus blandus*, 1 *Strophosomus coryli*, 2 weevil heads); beetles (2 *Serica brunnea*, 1 *Xantholinus* sp.); 1 ant (*Myrmica rubra*); remains of an immature insect.
847. Female; Parkhill, Aberdeenshire; 30th July 1912: remains of earth-worms; many eggs of crane-fly; remains of 3 saw-fly larvæ; beetles (2 *Pterostichus niger*, 1 *Cryptohypnus riparius*); heads of weevils (2 *Barynotus* sp., 1 *Sitones* sp.); 2 saw-flies (*Allantus arcuatus*); fragment of a bee; 2 Diptera (*Calliphora* sp., *Syrphus* sp.); grass.

848. Female; Countesswells, Aberdeenshire; 30th July 1912: packed with remains of insects—17 saw-flies (*Allantus arcuatus*), fragment of a bee; remains of 2 saw-fly larvæ; remains of 10 weevils (*Barynotus schönherri*); 1 beetle (*Pterostichus niger*) and head of a small ground beetle.
849. Female; Craibstone, Aberdeenshire; 3rd August 1912: remains of earth-worms; many eggs of crane-fly; fragments of insects; 2 beetles (*Pterostichus niger*) and 5 heads of beetles; a few pieces of potato; fragments of vegetable matter. Many eggs of crane-fly in the intestine.
850. Female; Craibstone, Aberdeenshire; 3rd August 1912: 5 weevils (3 *Barynotus schönherri*, 2 *Tropiphorus tomentosus*); 1 Dipteron (*Leptis lingaria*); eggs of crane-fly; fragments of chitin; 1 seed of *Persicaria* (*Polygonum Persicaria*). A few eggs of crane-fly in the intestine.
851. Female; Craibstone, Aberdeenshire; 3rd August 1912: remains of a moth (? *Agrotis* sp.); remains of 14 harvestmen (*Liobunum* sp.); 7 Diptera (2 *Pollenia rudis*, 1 *Symphoromyia crassicornis*, 1 *Tipula cleracea*, 1 *T. paludosa*, 1 *Muscida*, 1 *Cordyluride*); fragments of 2 bees; remains of an ichneumon fly (*Ichneumon* sp.); eggs of crane-fly. In the intestine were found a few eggs of crane-fly and 1 beetle (*Calathus melanocephalus*).
852. Female; Craibstone, Aberdeenshire; 3rd August 1912: over 1000 seeds of crowberry (*Empetrum nigrum*); 2 seeds of a grass; fragments of grass and vegetable matter; remains of 4 grasshoppers; 2 spiders (*Neriene livida*); 2 Diptera (*Leptis lingaria*); 4 Hemiptera (2 *Nabis major*, 2 *Philænus spumarius*); weevils (3 *Barynotus schönherri*, 2 *Tropiphorus tomentosus*); head and thorax of a Lamellicorn beetle. 113 seeds of crowberry in the intestine.
853. Male; Skene, Aberdeenshire; 20th August 1912: 42 beetles (*Aphodius contaminatus*); fragment of a bee; husks of cereal.
854. Female; Parkhill, Aberdeenshire; 17th September 1912: 6 barley grains; husks and fragments of cereal.
855. Male; Parkhill, Aberdeenshire; 1st October 1912: remains of earth-worms; fragments of dung beetles (*Aphodius* sp.); 11 corn grains; husks and fragments of cereal.
856. Male; Skene, Aberdeenshire; 8th October 1912: 24 corn grains; 13 barley grains; husks and fragments of cereal; 1 caterpillar (*Pieris brassicæ*); heads of 3 rove beetles; fragment of a spider.
857. Female; Scotston, Aberdeenshire; 9th October 1912: 52 barley grains; husks and fragments of cereal; 1 larva of Lamellicorn beetle (1 *Melolontha vulgaris*); 2 ants (*Myrmica rubra*); head of a weevil (*Sitones* sp.); 12 Diptera (*Borborus* sp.).
- 858-883. 26 birds examined, 23rd May 1911, 26th May 1911, 30th May 1911, 2nd May 1912, 18th May 1912, 28th May 1912, and 18th June 1912, were found empty.

Summary:—178 contained grain; 121, potato; 5, turnip; 32, seeds; 28, grass; 12, leaves; 3, strawberry; 173, insects of injurious group; 102, indifferent group; 34, beneficial group; 31, earth-worm; 8, spider; 2, mollusc; 3, egg-shell; 2, millepede; 1, harvestmen; 1, shrew.

SKYLARK (*Alauda arvensis*, Linn.).

884. Male; Newburgh, Aberdeenshire; 6th September 1911: fragments of cereal; seeds—14 *Persicaria* (*Polygonum Persicaria*), 4 achenes of buttercup (*Ranunculus repens*); head of weevil; elytra of beetle.
885. Female; Parkhill, Aberdeenshire; 5th December 1911: grass;

- seeds—13 *Persicaria* (*Polygonum Persicaria*), 3 sheep-sorrel (*Rumex Acetosella*), 3 achenes of buttercup (*Ranunculus ?repens*), 3 clover (*Trifolium* sp.), 26 seeds (*Cruciferae*); fragments of seeds.
886. Male; Parkhill, Aberdeenshire; 5th December 1911: grass; seeds—12 black bindweed (*Polygonum Convolvulus*), 1 sheep-sorrel (*Rumex Acetosella*), 1 achene of buttercup (*Ranunculus ?repens*), 14 seeds (*Cruciferae*), 2 clover (*Trifolium* sp.).
887. Sex (?); Parkhill, Aberdeenshire; 5th December 1911: seeds—7 *Persicaria* (*Polygonum Persicaria*), 2 achenes of buttercup (*Ranunculus ?repens*), 1 clover (*Trifolium* sp.), 20 seeds (*Cruciferae*); fragments of seeds.
888. Male; Parkhill, Aberdeenshire; 5th December 1911: grass; seeds—56 achenes of buttercup (*Ranunculus ?repens*), 6 sheep-sorrel (*Rumex Acetosella*), 5 *Persicaria* (*Polygonum Persicaria*), 4 knot-grass (*P. aviculare*), 3 clover (*Trifolium* sp.), 11 seeds (*Cruciferae*); fragments of seeds.
889. Male; Murcar, Aberdeenshire; 26th December 1911: grass; seeds—40 spurrey (*Spergula arvensis*), 5 sheep-sorrel (*Rumex Acetosella*), 2 knot-grass (*Polygonum aviculare*); fragments of seeds.
890. Female; Murcar, Aberdeenshire; 26th December 1911: grass; seeds—41 spurrey (*Spergula arvensis*), 28 knot-grass (*Polygonum aviculare*), 14 sheep-sorrel (*Rumex Acetosella*); fragments of seeds; remains of a spider (*Neriene* sp.).
891. Male; Parkhill, Aberdeenshire; 8th January 1912: grass; seeds—31 spurrey (*Spergula arvensis*); fragments of seeds; 3 fir needles. 1 spurrey seed in the intestine.
892. Male; Parkhill, Aberdeenshire; 15th January 1912: grass; 2 seeds of knot-grass (*Polygonum aviculare*).
893. Male; Parkhill, Aberdeenshire; 15th January 1912: grass; 11 seeds of sheep-sorrel (*Rumex Acetosella*); beetles—(1 *Quedius umbrinus*, 1 *Tachinus rufipes*, fragment of beetle?); remains of a weevil (*Otiorrhynchus* sp.).
894. Male; Maldon, Essex; 23rd January 1912: grass; seeds—19 seeds of a Crucifer (*Brassica* sp.), 4 achenes of buttercup (*Ranunculus* sp.).
895. Male; Maldon, Essex; 23rd January 1912: grass; seeds—48 *Persicaria* (*Polygonum Persicaria*), 11 achenes of buttercup (*Ranunculus* sp.).
896. Male; Maldon, Essex; 23rd January 1912: grass; seeds—61 goose-foot (*Chenopodium* sp.), 48 knot-grass (*Polygonum aviculare*), 26 achenes of buttercup (*Ranunculus* sp.).
897. Male; Parkhill, Aberdeenshire; 6th March 1912: grass; remains of clover leaves; seeds—1 spurrey (*Spergula arvensis*), 4 *Persicaria* (*Polygonum Persicaria*), 2 knot-grass (*P. aviculare*).
898. Male; Parkhill, Aberdeenshire; 6th March 1912: a few fragments of grass; 2 seeds of spurrey (*Spergula arvensis*).
899. Male; Parkhill, Aberdeenshire; 6th March 1912: grass; seeds—28 spurrey (*Spergula arvensis*), 1 black bindweed (*Polygonum Convolvulus*); fragments of seeds.
900. Male; Parkhill, Aberdeenshire; 6th March 1912: grass: seeds—6 spurrey (*Spergula arvensis*), 3 sheep-sorrel (*Rumex Acetosella*), 3 knot-grass (*Polygonum aviculare*), 3 ribwort (*Plantago ?lanceolata*), 1 charlock (*Brassica sinapistrum*); weevils (1 *Otiorrhynchus picipes*, 1 *Sitones* sp.); 1 larva of a Dipteron.
901. Male; Parkhill, Aberdeenshire; 6th March 1912: grass; seeds—6 ribwort (*Plantago ?lanceolata*), 3 knot-grass (*Polygonum aviculare*), 3 sheep-sorrel (*Rumex Acetosella*), 1 *Persicaria* (*P. Persicaria*); fragments of seeds; a few small pieces of potato.

902. Male; Balgownie, Aberdeen; 19th March 1912: grass; fragments of leaves (? clover); 21 seeds of spurrey (*Spergula arvensis*); fragments of 2 spiders.
903. Female; Balgownie, Aberdeen; 19th March 1912: grass; seeds—51 spurrey (*Spergula arvensis*), 28 knot-grass (*Polygonum aviculare*), 14 black bindweed (*P. Convolvulus*), 2 *Persicaria* (*P. Persicaria*), 4 mouse-ear chickweed (*Cerastium* sp.); fragments of seeds.
904. Male; Balgownie, Aberdeen; 19th March 1912: grass; fragments of leaves (? clover); 3 seeds of spurrey (*Spergula arvensis*); fragments of a beetle.
905. Male; Balgownie, Aberdeen; 19th March 1912: grass; seeds—20 achenes of buttercup (*Ranunculus* sp.), 5 charlock (*Brassica sinapis-trum*), 4 spurrey (*Spergula arvensis*); fragments of 2 weevils.
906. Female; Craigdam, Aberdeenshire; 17th August 1912: 7 seeds of sheep-sorrel (*Rumex Acetosella*); fragments of vegetable matter; fragments of a weevil.
907. Male; Scotston, Aberdeenshire; 9th October 1912: 13 corn grains; fragments of cereal; 12 seeds of sheep-sorrel (*Rumex Acetosella*).

Summary:—24 contained seeds; 20, grass; 3, clover leaves; 2, cereal; 1, potato; 6, insects of indifferent group; 5, injurious group; 2, spiders.

SWIFT (*Cypselus apus*, Linn.).

908. Male; Aberdeen; 17th July 1911: remains of 30 weevils (*Sitones* sp.); remains of 7 beetles (3 *Xantholinus* sp., 2 *Notiophilus* sp., 2 rove beetles); fragment of a Dipteron.

Contained insects of injurious group, of beneficial group, and of indifferent group.

LESSER SPOTTED WOODPECKER (*Dendrocopus minor*, Linn.).

- 909, 910. 1 male; 1 female; Maldon, Essex; 29th January 1912. Both contained fragments of beetle larvæ, probably of a wood-boring beetle.

LONG-EARED OWL (*Asio otus*, Linn.).

911. Female; Kincorth, Kincardineshire; 4th April 1911: 1 dung beetle (*Geotrupes stercorarius*).
912. Female; Strathdon, Aberdeenshire; 16th May 1911: remains of 3 voles (*Microtus agrestis*); a few fragments of egg-shell.
913. Male; Huntly, Aberdeenshire; 18th May 1911: 1 dung beetle (*Geotrupes stercorarius*).
914. Male; Whitestripes, Aberdeenshire; 25th August 1911: head of beetle (*Necrophorus* sp.); remains of 2 shrews (*Sorex vulgaris*); remains of 2 field voles (*Microtus agrestis*); 1 carpel (*Ranunculus* sp.), probably swallowed adhering to prey.
915. Female; Bieldside, Aberdeenshire; 21st September 1911: remains of a vole (*Microtus agrestis*); a small quantity of hair.
916. Female; Glenbucket, Aberdeenshire; 24th November 1911: a few small pellets of hair, probably of some small mammal.
- 917-920. 4 birds, examined 9th May 1911, 2nd June 1911, 7th June 1911, were found empty.

Summary:—3 contained insects of indifferent group; 3, voles; 1, shrew; 2, hair; 1, egg-shell; 1, seed.

TAWNY OWL (*Syrnium aluco*, Linn.).

921. Sex (?); Rothes, Morayshire; 9th March 1911: remains of a rat.
 922. Female; Locality (?); 30th March 1911: bird's feathers.
 923. Male; Craibstone, Aberdeenshire; 8th April 1911: remains of a field mouse (*Mus sylvaticus*); remains of several caterpillars (*Noctuidæ*); 2 seeds of a grass, probably adhering to prey.
 924. Male; Locality (?); 4th May 1911: remains of a mole (*Talpa*).
 925. Male; Cults, Aberdeenshire; 16th May 1911: remains of 1 dung beetle (*Geotrupes* sp.).
 926. Male; Woodside, Aberdeen; 23rd May 1911: elytra of a beetle (?); cinders.
 927. Male; Woodside, Aberdeen; 29th May 1911: a few feathers.
 928. Male; Locality (?); 31st May 1911: 1 feather.
 929. Male; Locality (?); 31st May 1911: a fragment of bone.
 930. Male; Locality (?); 9th June 1911: a few feathers.
 931. Male; Craibstone, Aberdeenshire; 21st August 1911: remains of a shrew (*Sorex vulgaris*); remains of 1 beetle (*Necrophorus rufator*); 7 eggs of a snail.
 932. Male; Alford, Aberdeenshire; 30th August 1911: remains of a vole (*Microtus agrestis*).
 933. Male; Portlethen, Aberdeenshire; 21st September 1911: remains of a bird.
 934. Male; Alford, Aberdeenshire; 31st January 1912: remains of a vole (*Microtus agrestis*).
 935. 1 bird, examined 24th November 1911, was found empty.

Summary.—7 contained remains of small mammals; 4, feathers; 3, insects of indifferent group; 1, injurious group; 1, bird; 1, seed; 1, egg of snail.

ROUGH-LEGGED BUZZARD (*Buteo lagopus*, J. F. Gmelin).

936. 1 bird from Ballater, examined 31st October 1911, was found empty.

SPARROW-HAWK (*Accipiter nisus*, Linn.).

937. Male; Oldmeldrum, Aberdeenshire; 8th September 1911: remains of a bird.
 938. 1 bird, examined 4th April 1911, was found empty.

PEREGRINE FALCON (*Falco peregrinus*, Tunstall).

939. 1 bird from Newmachar, examined 27th March 1911, was found empty.

KESTREL (*Falco tinnunculus*, Linn.).

940. Female; Nigg, Kincardineshire; 16th May 1911: elytra of beetle (*Carabus nitens*).
 941. Female; Craibstone, Aberdeenshire; 18th November 1911: remains of hair and skeleton of the common shrew (*Sorex vulgaris*); remains of 2 ground beetle larvæ (*Carabus* sp.); skins of 10 caterpillars (*Noctuidæ*).
 942. Male; Alford, Aberdeenshire; 27th January 1912: remains of 2 voles (*Microtus agrestis*).
 943. Female; Kincorth, Kincardineshire; 27th February 1912: remains of 1 vole (*Microtus agrestis*).

944, 945. 2 birds from Nairn, examined 30th June 1911, were found empty.

Summary.—3 contained remains of small mammals; 2, insects of beneficial group; 1, indifferent group; 1, injurious group.

COMMON CORMORANT (*Phalacrocorax carbo*, Linn.).

946. Female; Aberdeen; 4th March 1912: 4 sand eels (*Ammodytes tobianus*); remains of a fish (?); fragments of fish bone; 4 otoliths.

GANNET (*Sula bassana*, Linn.).

947. Female: Locality (?); 8th March 1911: fish bones; 14 otoliths of a small cod.

HERON (*Ardea cinerea*, Linn.).

948. Male; Locality (?); 31st March 1911: grass; algae.

949. Male; Ardclach, Nairnshire; 9th May 1911: remains of a trout (*Salmo fario*); fragment of a beetle; 1 caddis-fly tube; piece of a twig; moss.

950. Male; Braemar, Aberdeenshire; 25th May 1911: fish bones; 4 caddis-flies (*Metanæa flavipennis*); 1 caddis-fly (?); remains of 7 stone-fly larvæ; remains of an ant; 1 weevil (*Sitones tibialis*); fragments of 2 beetles; 3 eggs of a leech.

951. Male; Craibstone, Aberdeenshire; 12th June 1911: remains of 71 pupæ of gnat type (? *Chironomida*); 4 caddis-flies (*Goera*); 3 caddis-fly cases; 4 pupa cases of caddis-flies; beetles (2 *Elmids æneus*, 1 *Homalium rivulare*, 1 *Meligethes viridescens*); fragments of a beetle; 3 eggs of a leech; 3 pellets of hair of a small mammal; 1 seed of pond-weed (*Potamogeton*); grass; moss.

952. Female; Aberdeenshire; 29th December 1911: remains of a fish (*Salmonida*); many fragments of Crustaceans; remains of a caddis-fly; 1 larva of *Tanytus*; fragments of 2 larvæ; remains of earthworms; 1 seed (*Polygonum* sp.).

953. Sex (?); Craibstone, Aberdeenshire; 28th September 1912: remains of a trout (*Salmonida*); 21 fish eggs; remains of 2 Diptera (*Bibionida*); 4 caddis-flies (*Limnophilus* sp.); remains of 2 caddis-flies (?); 2 weevils (*Hypera polygoni*, *Sitones* sp.); 1 harvestman (*Nemastoma lugubre*).

954. One bird from Blackburn, examined 17th January 1912, was found empty.

Summary.—5 contained insects of indifferent group; 2, injurious group; 2, eggs of a leech; 1, Crustacea; 1, earthworms; 1, harvestman; 2, seeds; 2, grass; 2, moss; 1, algae.

MAILLARD (*Anas boschas*, Linn.).

955. Female; Aberdeen; 22nd January 1912: seeds—12 achenes of a buttercup (*Ranunculus* sp.), 7 ovaries of a grass.

956. Sex (?); Skene, Aberdeenshire; 15th October 1912: 2 seeds of pond-weed (*Potamogeton* sp.).

957. Sex (?); Skene, Aberdeenshire; 15th October 1912: fragments of decomposed vegetable matter.

Summary.—2 contained seeds.

TEAL (*Nettion crecca*, Linn.).

958. Male; Huntly, Aberdeenshire; 30th March 1911: seeds—10 empty carpels (?), 8 carpels of a sedge (? *Carex* sp.), 4 seeds (?), 3 seeds probably of broad-leaved pond-weed (*Potamogeton* sp.), 2 seeds of sorrel (*Rumex* sp.).

WIDGEON (*Mareca penelope*, Linn.).

959. Female; Loch Spynie, Elginshire; 21st December 1911: filled with sand; a few fragments of grass; 4 seeds of common mare's-tail (*Hippuris vulgaris*).
960. Female; Pitgaveny, Elginshire; 23rd January 1912: filled with grass.

Summary:—2 contained grass; 1, seeds.

GOLDEN-EYE DUCK (*Clangula glaucion*, Linn.).

961. Female; Brora, Sutherlandshire; 9th February 1912: 24 littoral molluscs (*Littorina rudis*); 18 sandhoppers (*Talitrus locusta*); fragments of seaweed.

GOOSANDER (*Mergus merganser*, Linn.).

962. One bird from Turriff, examined 7th February 1912, was found empty.

WOOD-PIGEON (*Columba palumbus*, Linn.).

963. Female; Forres, Morayshire; 27th March 1911: clover leaves (*Trifolium ? repens*); leaves of buttercup (*Ranunculus repens*); grass; 2 seeds of speedwell (*Veronica* sp.).
964. Female; Craibstone, Aberdeenshire; 2nd May 1911: 29 grains of barley, of which 17 were sprouted; 9 grains of corn, of which 2 were sprouted; husks and fragments of cereal; Swedish turnip tops; clover leaves (*Trifolium repens*); buttercup leaves (*Ranunculus repens*); clusters of flower buds of turnips.
965. Female; Braemar, Aberdeenshire; 21st June 1911: 579 seeds of charlock (*Brassica sinapistrum*); fragments of seeds.
966. Male; Craibstone, Aberdeenshire; 13th June 1911: inflorescence of a grass (*Poa pratensis*); buds of buttercups (*Ranunculus ? acris*); remains of violets (*Viola canina*); clover leaves (*Trifolium repens*); leaves of young field pea (*Pisum arvense*); seeds and carpels of violet (*Viola canina*).
967. Male; Nairn, Nairnshire; 14th June 1911: clover leaves (*Trifolium repens*).
968. Male; Craibstone, Aberdeenshire; 25th July 1911: filled with blaeberrries (*Vaccinium myrtillus*); flower buds of charlock (*Brassica sinapistrum*).
969. Male; Craibstone, Aberdeenshire; 21st August 1911: 29 blaeberrries; 53 corn grains; 44 barley grains; husks and fragments of cereal; grass; clover leaves (*Trifolium repens*); seeds—1 oat (*Avena* sp.), piece of seed of a fir, 1 ovary of Persicaria (*Polygonum Persicaria*), 5 fruits of a buttercup (*Ranunculus ? acris*), seeds of blaeberrries; 1 grey slug (*Agriolimax agrestis*).
970. Male; Turriff, Aberdeenshire; 29th September 1911: 979 corn grains; fragments of grains; 24 peas (*Pisum arvense*); seeds—25 spurrey (*Spergula arvensis*), 9 black bindweed (*Polygonum Convolvulus*), 9 charlock (*Brassica sinapistrum*), 1 hemp-nettle (*Galeopsis Tetrahit*); remains of an earth-worm.

971. Male; Turriff, Aberdeenshire; 29th September 1911: 791 barley grains; 334 corn grains; husks and fragments of cereal; 16 peas (*Pisum arvense*); seeds—6 spurrey (*Spergula arvensis*), 2 black bindweed (*Polygonum Convolvulus*).
972. Male; Turiff, Aberdeenshire; 29th September 1911: 420 barley grains; 278 corn grains; husks and fragments of cereal; 1 seed of hemp-nettle (*Galeopsis Tetrahit*).
973. Female; Craibstone, Aberdeenshire; 4th November 1911: 509 corn grains; 611 barley grains; husks and fragments of cereal; 16 seeds of spurrey (*Spergula arvensis*); remains of 2 small snails; remains of 2 earth-worms.
- 974, 975. 2 males; Newmachar, Aberdeenshire; 6th February 1912: both packed with pieces of kale. The birds were shot during a snow-storm.
976. Female; Alford, Aberdeenshire; 6th February 1912: 3 fragments of a leaf.
- 977, 978. 2 females; Kincorth, Kincardineshire; 20th February 1912: both filled with clover leaves (*Trifolium repens*); in one also 4 seeds of spurrey (*Spergula arvensis*).
979. Male; Kincorth, Kincardineshire; 20th February 1912: packed with pieces of bread.
980. Male; Kincorth, Kincardineshire; 20th February 1912: clover leaves (*Trifolium repens*); a few pieces of turnip top; a few pieces of potato; seeds—2 spurrey (*Spergula arvensis*), 1 charlock (*Brassica sinapistrum*); remains of an earth-worm.
981. Female; Kincorth, Kincardineshire; 27th February 1912: filled with pieces of potato.
982. Female; Kincorth, Kincardineshire; 27th February 1912: pieces of turnip tops; remains of a clover leaf; 2 nutlets of hemp-nettle (*Galeopsis Tetrahit*).
983. Female; Kincorth, Kincardineshire; 27th February 1912: filled with pieces of turnip top; a few pieces of potato.
984. Sex (?); Kincorth, Kincardineshire; 27th February 1912: filled with turnip tops; a few small pieces of turnip; 1 seed of black bindweed (*Polygonum Convolvulus*); 1 sclerotium of a fungus (?); 2 sclerotia of a fungus (*Sclerotinia sclerotiorum*).
985. Female; Craibstone, Aberdeenshire; 11th May 1912: 54 corn grains; 44 barley grains; husks and fragments of cereal; a few pieces of turnip top; 4 inflorescences of a Crucifer (? turnip); 1 seed of spurrey (*Spergula arvensis*); remains of an earth-worm; beetles (2 *Meligethes* ? *æneus*, 1 *Tachyporus chrysomelinus*).
- 986-988. 2 females; 1 male; Craibstone, Aberdeenshire; 22nd June 1912: all filled with clover leaves (*Trifolium repens*); buds and flowers of buttercup (*Ranunculus repens*); a few pieces of grass.
989. Sex (?); Craigdam, Aberdeenshire; 17th August 1912: seeds and seed capsules of spurrey (*Spergula arvensis*); 2 seed capsules of mouse-ear chickweed (*Cerastium glomeratum*); 8 inflorescences of a Crucifer (? turnip); a few fragments of leaves (? clover); 2 corn grains.
990. Female; Parkhill, Aberdeenshire; 24th September 1912: 658 barley grains; 2 corn grains; husks and fragments of cereal.
991. Female; Craibstone, Aberdeenshire; 12th October 1912: 61 corn grains; 2 barley grains; husks and fragments of cereal; 2 snails (*Vitrina pelucida*).

Summary:—14 contained seeds; 13, leaves; 10, cereal; 7, inflorescences; 6, turnip tops; 3, grass; 3, potato; 2, peas; 2, kale; 2, blaberries; 1, turnip; 1, fungus; 4, earth-worms; 3, snails; 1, insects of indifferent group; 1, bread.

ROCK-DOVE (*Columba livia*, Linn.).

992. Female; Elgin, Morayshire; 16th June 1911: 5 corn grains; 2375 seeds and 25 fruits of the common vetch (*Vicia sativa*); 8 seeds of black bindweed (*Polygonum Convolvulus*); 74 much-digested seeds; 4 beans (*Vicia Faba*); 21 peas (*Pisum sativa*); fragments of beans and peas.

PHEASANT (*Phasianus colchicus*, Linn.).

993. Male; Forres, Morayshire; 26th January 1911: seeds—6743 spurrey (*Spergula arvensis*), 45 hemp-nettle (*Galeopsis Tetrahit*), 22 achenes of buttercup (*Ranunculus ? acris*), 10 chickweed (*Stellaria media*); leaves and pieces of stems of stone bedstraw (*Galium saxatile*), of sheep-sorrel (*Rumex Acetosella*), of buttercup (*Ranunculus ? acris*); pieces of potato; grass; 3 cocoons of ichneumon flies. The potato formed the bulk of the content.

PARTRIDGE (*Perdix cinerea*, Latham).

994. Male; Forres, Morayshire; 19th May 1911: seeds—21 sorrel (*Rumex Acetosa*), 17 sheep-sorrel (*Rumex Acetosella*), 4 spurrey (*Spergula arvensis*); grass.

LAND-RAIL (*Crex pratensis*, Bechstein).

995. Female; Alford, Aberdeenshire; 5th September 1911: 2 corn grains; husks and fragments of cereal; 3 seeds of spurrey (*Spergula arvensis*); head of a weevil (*Sitones* sp.); fragment of head of a beetle; fragments of chitin; pieces of skins of "leather-jackets."

MOOR-HEN (*Gallinula chloropus*, Linn.).

996. Female; Craigdam, Aberdeenshire; 13th January 1911: grass; fragments of buttercup leaves (*Ranunculus ? acris*); 4 achenes of buttercup (*R. ? acris*).
997. Male; Aberdeen; 14th March 1911: grass.
998. Female; Craibstone, Aberdeenshire; 1st May 1911: grass; fragments of chitin.
999. Male; Locality (?); 19th May 1911: grass.
1000. Female; Nairn, Nairnshire; 16th June 1911; filled chiefly with leaves of the kidney-vetch (*Anthyllus vulneraria*); 14 fruits of the Scotch elm (*Ulmus montana*); fragments of a saw-fly.
1001. Female; Craibstone, Aberdeenshire; 2nd August 1911: grass; seeds—57 rowan (*Pyrus Aucuparia*), 2 hawthorn (*Crataegus oxyacantha*); remains of 20 beetles (*Helophorus aeneipennis*).
1002. Male; Craibstone, Aberdeenshire; 1st September 1911: 1 beetle (*Philonthus laminatus*); head of rove beetle; fragments of an insect; grass.
1003. Male; Durris, Aberdeenshire; 16th September 1911: 98 corn grains; husks of cereal; a few pieces of grass; 1 seed of chickweed (*Stellaria media*); 2 earth-worms; 1 rove beetle (*Oxytelus* sp.); fragment of a caterpillar.
1004. Male; Craibstone, Aberdeenshire; 11th November 1911: grass; a few clover leaves (*Trifolium* sp.); 1 corn grain; seeds—25 spurrey (*Spergula arvensis*), 9 mouse-ear chickweed (*Cerastium* sp.); 2 *Persicaria* (*Polygonum Persicaria*).

1005. Female; Craibstone, Aberdeenshire; 11th November 1911: grass; a few pieces of moss; 2 corn grains; seeds—22 ? rowan (*Pyrus Aucuparia*), 1 mouse-ear chickweed (*Cerastium* sp.).
1006. Male; Craibstone, Aberdeenshire; 8th June 1912: 56 Diptera (*Hilara matrona*); grass.
1007. Female; Craibstone, Aberdeenshire; 6th July 1912: grass; moss.
- 1008, 1009. 2 males; Craibstone, Aberdeenshire; 27th July 1912: filled with grass.
1010. Female; Parkhill, Aberdeenshire; 17th September 1912: grass; inflorescences of a grass (*Holcus linatus*); 2 ovaries of Bur-reed (*Sparganium* sp.); 1 seed capsule and many seeds of a rush (*Juncus* sp.); 10 seeds of raspberry (*Rubus Idæus*); moss; remains of earth-worms; remains of 1 caddis-fly.
1011. Female; Craibstone, Aberdeenshire; 21st September 1911: grass; seeds—1 sedge (*Carex* sp.), 1 buttercup (*Ranunculus* sp.); a birch carpel and bract (*Betula alba*); 9 Diptera (2 *Pollenia rudis*, 3 *Scatophaga* sp., 1 *Erioptera* sp., 3 *Chironomidae*); 4 Aphids (*Siphonophora* sp.); fragments of 2 Aphids; 1 frog-hopper (*Philænus spumarius*).

Summary.—14 contained grass; 8, seeds; 3, cereal; 3, leaves; 3, moss; 7, insects of indifferent group; 3, injurious group; 1, beneficial group; 2, earth-worms.

RINGED PLOVER (*Ægialitis hiaticola*, Linn.).

1012. Female; Scotston, Aberdeenshire; 28th November 1911: a few fragments of chitin.
1013. Male; Parkhill, Aberdeenshire; 15th January 1912: 1 larva of a Dipteron; remains of a weevil (*Apion* sp.); 1 beetle (*Hydroporus rivalis*); remains of beetles (1 *Aphodius* sp., 1 ground beetle, 1 rove beetle); 1 fruit of knot-grass (*Polygonum aviculare*).
1014. 1 bird, examined 16th July 1912, contained only stones and sand.

GOLDEN PLOVER (*Charadrius plumialis*, Linn.).

1015. Female; Murcar, Aberdeenshire; 26th December 1911: fragments of a spider (?); remains of 1 ground beetle larva; 24 larvæ of a Dipteron; remains of a slug; beetles (6 *Megasternum boletophagum*, 1 *Xantholinus linearis*, head of rove beetle); weevils (2 *Sitones puncticollis*, head of *Sitones* sp.); decomposed vegetable matter.
1016. Male; Aberdeen; 24th January 1912: remains of an earth-worm; 7 larvæ of a Dipteron; 3 forceps of earwigs; 3 weevils (*Sitones* sp.); beetles (2 *Megasternum boletophagum*, 2 *Xantholinus* sp., 1 *Helophorus rugosus*, head of a ground beetle); a few pieces of grass and moss; seeds—2 spurrey (*Spergula arvensis*), 2 rye-grass (*Lolium perenne*), 1 much-digested seed.
1017. Male; Aberdeen; 24th January 1912: remains of 3 weevils (*Sitones* sp.); remains of an earth-worm; grass.
1018. Male; Aberdeen; 24th January 1912: beetles (1 *Megasternum boletophagum*, 1 *Cercyon pygmaeus*); weevils (4 *Sitones* sp., 1 *Barynotus schönherri*, 1 *Hypera* sp.); 1 Dipteron (*Sepedon* sp.); 1 larva of a Dipteron; 1 beetle larva (? *Melolontha vulgaris*); grass; moss.
1019. Female; Aberdeen; 24th January 1912: remains of earth-worms; 6 larvæ of a Dipteron; 1 beetle larva (*Telephorus fuscus*); fragments of 8 weevils (*Sitones* sp.); seeds—3 spurrey (*Spergula arvensis*), 1 sheep-sorrel (*Rumex Acetosella*); grass; remains of 2 snails.

1020. Female; Aberdeen; 24th January 1912: 1 earwig (*Forficula auricularia*); 10 weevils (*Sitones* sp.); beetles (2 *Megasternum boletophagum*, 2 *Aphodius* sp., 1 *Xantholinus linearis*); 13 larvæ of a Dipteron; 1 larva of a Dipteron; 1 larva of a Dipteron (*Bibio* sp.); 5 snails (*Vittrina pellucida*); grass.
1021. Male; Parkhill, Aberdeenshire; 17th September 1912: 3 weevils (*Sitones* sp.); beetles (1 *Notiophilus biguttatus*, 1 *Homalota* sp., 3 heads of *Xantholinus* sp., remains of 1 *Aphodius* sp. and 1 *Ocypus* sp.); fragments of 3 click beetles and 2 ground beetles.

Summary:—7 contained insects of injurious group; 6, indifferent group; 3, beneficial group; 3, snail; 3, earth-worm; 1, spider; 5, grass; 2, seeds; 2, moss.

LAPWING (*Vanellus vulgaris*, Bechstein).

1022. Female; Craigdam, Aberdeenshire; 20th March 1911: 1 "leather-jacket" (larva of crane-fly); 14 wire-worms; 1 larva of a Dipteron (*Muscidæ*); 5 larvæ of Diptera; remains of a slug (*Agriolimax* sp.).
1023. Male; Parkhill, Aberdeenshire; 12th April 1911: remains of an earth-worm; fragment of an insect; 1 seed of spurrey (*Spergula arvensis*); grass.
1024. Male; Ardlach, Nairnshire; 9th May 1911: 1 "leather-jacket"; 7 wire-worms; fragments of 2 beetles (?).
1025. Male; Parkhill, Aberdeenshire; 22nd May 1911: 5 "leather-jackets"; remains of 3 beetles; husks of cereal; 1 seed of sheep-sorrel (*Rumex Acetosella*).
1026. Male; Parkhill, Aberdeenshire; 22nd May 1911: 2 whole and remains of 17 "leather-jackets"; 2 wire-worms; 1 larva of a Dipteron; 2 weevils (*Barynotus schönherri*); remains of 1 beetle (*Pterostichus* sp.).
1027. Female; Nairn, Nairnshire; 16th June 1911: remains of 23 "leather-jackets"; 5 wire-worms; 2 caterpillars (*Triphaena pronuba*); fragments of 4 caterpillars; 2 weevils (*Barynotus schönherri*); fragment of a beetle.
1028. Female; Nairn, Nairnshire; 16th June 1911: remains of 5 "leather-jackets"; 4 wire-worms; 2 larvæ of Diptera; 2 larvæ of Diptera (*Muscidæ*); 3 larvæ of Diptera (*Tipulidæ*); 2 snails (*Zua lubrica*); fragments of 3 beetles.
1029. Female; Nairn, Nairnshire; 16th June 1911: fragments of weevils.
1030. Female; Nairn, Nairnshire; 16th June 1911: 5 "leather-jackets"; 3 larvæ of Diptera; remains of an earth-worm; head of rove beetle.
1031. Female; Balgownie, Aberdeen; 21st August 1911: 1 wire-worm.
1032. Female; Balgownie, Aberdeen; 21st August 1911: remains of 3 weevils (*Otiorrhynchus* sp.); grass.
1033. Female; Balgownie, Aberdeen; 21st August 1911: remains of several earth-worms; fragments of wire-worms; grass; seeds—6 sheep-sorrel (*Rumex Acetosella*), 2 carpels of buttercup (*Ranunculus* sp.), 1 ovary of a grass.
1034. Female; Balgownie, Aberdeen; 21st August 1911: 1 larva of a Dipteron; fragments of chitin; grass; seeds—1 sheep-sorrel (*Rumex Acetosella*), 2 buttercup (*Ranunculus* sp.), 1 ovary of a grass.
1035. Female; Scotston, Aberdeenshire; 28th November 1911: remains of an earth-worm; 1 spider (*Neriens* sp.); 1 beetle (*Xantholinus linearis*); heads of 5 rove beetles; 2 seeds of sheep-sorrel (*Rumex Acetosella*).

1036. Female; Aberdeen; 24th January 1912: remains of earth-worms; 2 larvæ of a Dipteron; weevils (1 *Sitones puncticollis*, 1 *S. tibialis*, 1 *Sitones* sp.); 2 seeds of sheep-sorrel (*Rumex Acetosella*), 3 ovaries of a grass; grass; moss. In the intestine were found the remains of 4 weevils (*Sitones* sp.) and 4 seeds of sheep-sorrel.
1037. Male; Parkhill, Aberdeenshire; 6th March 1912: fragments of a weevil; skin of a larva (?); 3 seeds of sheep-sorrel (*Rumex Acetosella*).
1038. Male; Parkhill, Aberdeenshire; 6th March 1912: remains of an earth-worm; 5 larvæ of a Dipteron.
1039. Male; Parkhill, Aberdeenshire; 6th March 1912: remains of 2 small caterpillars (*Noctuidæ*); 1 ground beetle larva (*Pterostichus* sp.); 2 weevils (*Sitones* sp.); fragments of 2 beetles; 2 seeds of sheep-sorrel (*Rumex Acetosella*).
1040. Male; Parkhill, Aberdeenshire; 12th March 1912: remains of earth-worms; remains of 2 weevils (*Otiorrhynchus* sp., *Sitones* sp.).
1041. Male; Parkhill, Aberdeenshire; 26th March 1912: remains of earth-worms; piece of skin of a caterpillar; 3 whole and remains of several wire-worms (*Corymbites pectinicornis*); 3 whole and remains of 4 beetle larvæ (*Helophorus* ? *aquaticus*); skins of 2 larvæ of a Dipteron; fragments of a weevil.
1042. Male; Parkhill, Aberdeenshire; 26th March 1912: grass; 3 seeds of sheep-sorrel (*Rumex Acetosella*); a few fragments of chitin.
1043. Male; Parkhill, Aberdeenshire; 26th March 1912: 2 whole and remains of several wire-worms (*Athous hæmorrhoidalis*); remains of 1 weevil (*Barynotus* sp.); decomposed vegetable matter.
1044. Female; Parkhill, Aberdeenshire; 14th May 1912: 2 whole and remains of 4 wire-worms (*Corymbites* sp.); fragments of 2 weevils (*Barynotus* sp.).
1045. Male; Parkhill, Aberdeenshire; 14th May 1912: 1 wire-worm (*Corymbites pectinicornis*); piece of skin of a caterpillar; remains of 2 "leather-jackets"; remains of a weevil (*Barynotus* sp.); beetles (2 *Anchomenus parumpunctatus*, 2 *Pterostichus vulgaris*, 1 *Anacæna globulus*, head of rove beetle).
1046. Male; Scotston, Aberdeenshire; 12th June 1912: 1 wire-worm (*Corymbites* sp.); 2 weevils (*Barynotus schönherri*); remains of a beetle (*Pterostichus niger*); decomposed vegetable matter.
1047. Male; Scotston, Aberdeenshire; 12th June 1912: remains of earth-worms; 1 "leather-jacket"; remains of an earwig; grass.
1048. Male; Scotston, Aberdeenshire; 12th June 1912: remains of an earth-worm; a few fragments of chitin; egg-case of crane-fly; grass.
1049. Female; Scotston, Aberdeenshire; 12th June 1912: remains of earth-worm; 4 "leather-jackets"; 1 larva of a Dipteron; head of a ground beetle; grass.
1050. Male; Scotston, Aberdeenshire; 18th June 1912: fragments of a weevil; piece of skin of a larva (?); a few fragments of vegetable matter.
1051. Female; Craibstone, Aberdeenshire; 24th June 1912: fragment of larva of ground beetle; remains of 2 weevils; a few husks of cereal; a few fragments of leaves.
1052. Male; Parkhill, Aberdeenshire; 17th September 1912: remains of 2 caterpillars (*Triphæna* sp.); 1 Dipteron (*Tipula oleracea*); head of a beetle; 5 heads of weevils (*Sitones* sp.); forceps of 3 earwigs.
1053. Female; Parkhill, Aberdeenshire; 17th September 1912: remains of a caterpillar (*Triphæna* sp.); 1 beetle larva (? *Melolontha vulgaris*); 1 beetle larva (? *Silphidæ*); 3 earwigs (*Forficula auricularia*); 9 weevils (*Sitones* sp.); head of beetle; 2 seeds of sheep-sorrel (*Rumex Acetosella*).

1054. Male; Parkhill, Aberdeenshire; 17th September 1912: grass; 3 seeds of spurrey (*Spergula arvensis*).
1055. Male; Parkhill, Aberdeenshire; 24th September 1912: a few fragments of vegetable matter.
1056. Male; Parkhill, Aberdeenshire; 24th September 1912: remains of earth-worms; 3 wire-worms (*Agriotes* sp.); 2 weevil larvæ; fragment of a weevil; fragment of a beetle; grass.
1057. Male; Parkhill, Aberdeenshire; 1st October 1912: 4 ground beetle larvæ (*Carabidæ*); 1 beetle (*Aphodius contaminatus*); forceps of an earwig; 1 seed of spurrey (*Spergula arvensis*); 1 fruit of knawel (*Scleranthus annuus*).
1058. Male; Scotston, Aberdeenshire; 9th October 1912: remains of an earth-worm; remains of 1 Dipteron (*Agromyzidæ*).
1059. One bird, examined 21st August 1911, was found empty.

Summary.—29 contained insects of injurious group; 22, indifferent group; 8, beneficial group; 13, earth-worms; 2, snails; 1, spider; 12, seeds; 10, grass; 2, cereal; 1, moss.

TURNSTONE (*Streptilas interpres*, Linn.).

1060. Female; Newburgh, Aberdeenshire; 18th July 1911: 84 opercula of a small mollusc.
1061. Female; Newburgh, Aberdeenshire; 18th July 1911: 50 opercula of a small mollusc.

OYSTER-CATCHER (*Hematopus ostralegus*, Linn.).

1062. Sex (?); Banchory, Aberdeenshire; 23rd March 1911: seeds—5 spurrey (*Spergula arvensis*), 5 sheep-sorrel (*Rumex Acetosella*), 3 chickweed (*Stellaria media*), 4 grass (?), 1 raspberry (*Rubus Idæus*), 1 buttercup (*Ranunculus* sp.), 5 heads of rushes (?); 1 seed (?); fragment of a leaf; husks of cereal; grass; 1 leg of a weevil.
1063. Male; Locality (?); 30th March 1911: filled with remains of limpets, but no shells of limpets; fragment of a mussel shell.
1064. Male; Ardlach, Nairnshire; 11th May 1911: remains of a large earth-worm; 9 whole and remains of 2 "leather-jackets" (larvæ of crane-fly); grass.
1065. Male; Nairn, Nairnshire; 15th June 1911: 41 whole and 59 pieces of "leather-jackets."
1066. Female; Nairn, Nairnshire; 15th June 1911: filled chiefly with earth; seeds—1 water chickweed (*Montia* sp.), 1 seed (?); mouth parts of 5 "leather-jackets."
1067. Female; Nairn, Nairnshire; 15th June 1911: remains of 6 "leather-jackets."
1068. Female; Elgin, Morayshire; 16th June 1911: fragments of 12 beetles (?).
1069. Female; Ardlach, Nairnshire; 29th June 1911: remains of earth-worms; remains of 32 "leather-jackets"; 1 larva of a Dipteron (*Muscidæ*); beetles—1 thorax of a click beetle, 2 heads of ground beetles; remains of 3 weevils (*Barynotus* sp.); 1 small swollen internode of rhizome of a grass (? *Avena elatior*).

Summary.—6 contained insects of injurious group; 2, indifferent group; 1, beneficial group; 2, earth-worms; 1 limpets; 3, grass; 2, seeds; 1 grain.

SNIFE (*Gallinago caelestis*, Frenzel).

1070. Female; Locality (?); 16th May 1911: seeds—4 partly-digested achenes, probably of lesser spearwort (*Ranunculus flammula*), 2 carpels of sedge (*Carex* sp.), 1 carpel of a grass (*Glyceria fluitans*), 1 sheep-sorrel (*Rumex Acetosella*).

DUNLIN (*Tringa alpina*, Linn.).

1071. Female; Shetland; 23rd May 1911: thorax of a beetle and fragments of chitin.
 1072. Male; Parkhill, Aberdeenshire; 15th January 1912: a piece of decomposed animal matter.
 1073-1075. 2 females; 1 male; Parkhill, Aberdeenshire; 15th January 1912: each contained a few fragments of grass.
 1076. Female; Aberdeen; 24th January 1912: a small quantity of decomposed vegetable matter.
 1077. Male; Murcar, Aberdeenshire; 6th February 1912: 5 littoral molluscs (*Littorina* sp.).
 1078, 1079. Two birds, examined 28th November 1911 and 15th January 1912, were found empty.

Summary:—3 contained grass; 1, insects of indifferent group; 1, littoral molluscs.

PURPLE SANDPIPER (*Tringa striata*, Linn.).

1080. Female; Cove, Kincardineshire; 28th January 1911: fragments of shells.

SANDERLING (*Calidris arenaria*, Linn.).

1081. Female; Murcar, Aberdeenshire; 6th February 1912: 1 egg-case of a dog whelk; fragments of seaweed; fragments of shell.

CURLEW (*Numenius arquata*, Linn.).

1082. Male; Parkhill, Aberdeenshire; 22nd May 1911: 50 pieces of skins of "leather-jackets" (larvæ of crane-fly).
 1083. Female; Craibstone, Aberdeenshire; 13th June 1911: a few fragments of chitin.
 1084. Female; Craibstone, Aberdeenshire; 8th June 1912: potato; 1 "leather-jacket"; 1 beetle (*Corymbites* sp.).
 1085. Male; Countesswells, Aberdeenshire; 23rd July 1912: 2 weevils (*Barynotus schönherri*); fragments of vegetable matter.
 1086. One bird, examined 7th June 1911, was found empty.

Summary:—3 contained insects of injurious group; 1, indifferent group; 1, potato.

COMMON TERN (*Sterna fluviatilis*, Naumann).

1087. Male; Scotston, Aberdeenshire; 5th July 1912: a few fragments of fish-bone.
 1088-1101. 14 young terns received from the breeding-ground at Forvie Sands on 21st July 1912. They had been picked up dead, and were in a quite fresh condition when examined. In no case was there any trace of food. Starvation and cold weather appeared to be the cause of death. On 22nd July 1912 a young plaice (*Pleuro-*

- nectes platessa*) was found in the nest of a common tern, in which were two chicks from one to two days' old. A sand eel (*Ammodytes tobianus*) was found about a foot away from the same nest.
- 1102-1104. Three birds, examined on 5th July 1911, 6th September 1911, and 8th June 1912, were found empty.

LITTLE TERN (*Sterna minuta*, Linn.).

1105. Female; Bridge of Don, Aberdeen; 18th May 1911: filled with remains of sand eels (*Ammodytes* sp.).

BLACK-HEADED GULL (*Larus ridibundus*, Linn.).

1106. Male; Murcar, Aberdeenshire; 15th April 1911: beetles (1 *Tachinus rufipes*, 1 *Pterostichus vulgaris*, 1 *Clivina fossor*, head of *Athous* sp., remains of rove beetle); weevils (1 *Otiorrhynchus picipes*, 1 *Sitones* sp.); 1 "leather-jacket" (larva of crane-fly); 1 larva of a Dipteron; 1 Lepidopterous larva; remains of 3 crane-flies (*Trichocera* sp.); 1 caddis-fly (*Sericostoma*); fragments of cereal; a few roots of grass.
1107. Female; Swordale, Ross-shire; 25th April 1911: husks and fragments of cereal; 3 corn grains; roots of grass; remains of skin of a caterpillar; 2 larvæ of Diptera; 3 pupa cases of Diptera; remains of 3 weevils (*Barynotus* sp.); remains of a beetle (*Pterostichus* sp.).
1108. Female; Dinnēt, Aberdeenshire; 10th May 1911: 4 heads of weevils; 31 legs of weevils; a few husks of cereal.
1109. Male; Dinnet, Aberdeenshire; 10th May 1911: 1 earth-worm; beetles (5 *Cryptohypnus riparius*, 1 *Philonthus politus*, 1 *Clivina fossor*, 1 *Lathrobium brunnipes*); weevils (1 *Barynotus schönherri*, 9 legs of weevils); remains of 4 stone-flies; 3 beetle larvæ (*Helophorus ? aquaticus*); 31 corn grains; husks and fragments of cereal.
1110. Male; Ardcloch, Nairnshire; 11th May 1911: beetles (12 *Agriotes obscurus*, 1 *Corymbites æneus*, 1 *Loricera pilicornis*, head of *Quedius* sp.); 3 whole and remains of 4 weevils (*Barynotus schönherri*); 17 wire-worms; remains of 2 "leather-jackets"; a few husks of cereal.
1111. Male; Ardcloch, Nairnshire; 11th May 1911: remains of 1 earth-worm; 16 wire-worms; 2 corn grains; husks of cereal.
1112. Male; Dinnet, Aberdeenshire; 12th May 1911: 1 wire-worm; remains of a beetle (*Pterostichus* sp.).
1113. Male; Dinnet, Aberdeenshire; 12th May 1911: remains of 3 earth-worms; 5 ground beetle larvæ (*Pterostichus* sp.); 14 wire-worms; 1 larva of a Dipteron; 1 pupa case of a Dipteron; beetles (5 *Pterostichus vulgaris*, 1 *Harpalus æneus*, remains of 2 rove beetles); fragment of a weevil.
1114. Female; Nairn, Nairnshire; 16th June 1911: a few pieces of grass.
1115. Male; Elgin, Morayshire; 16th June 1911: filled with decomposed fish; fish-bones; remains of 1 Dipteron (*Dolichopus* sp.).
1116. Female; Elgin, Morayshire; 16th June 1911: 1 wire-worm; fragments of 3 weevils.
1117. Male; Ardcloch, Nairnshire; 29th June 1911: a few husks and fragments of cereal; 2 pieces of grass.
1118. Male; Ardcloch, Nairnshire; 29th June 1911: fragments of maize; 2 corn grains; husks of cereal; potato.
1119. Female; Newburgh, Aberdeenshire; 5th July 1911: a few husks of

- cereal; 1 mollusc (*Purpura lapillus*); remains of a weevil (*Barynotus* sp.).
1120. Female; Newburgh, Aberdeenshire; 5th July 1911: a few husks of cereal; fragments of small Crustacea (*Amphipoda*); fragment of a weevil.
1121. Male; Newburgh, Aberdeenshire; 5th July 1911: a few pieces of potato.
1122. Male; Newburgh, Aberdeenshire; 18th July 1911: remains of 1 Crustacean (*Gammarus* sp.); claws of small Crustacea.
1123. Male; Craibstone, Aberdeenshire; 25th July 1911: 1 wire-worm; remains of a beetle. 34 eggs of crane-fly were found in the intestine.
1124. Male; Craibstone, Aberdeenshire; 29th July 1911: remains of 3 weevils (*Barynotus* sp.); beetles (1 *Clivina collaris*, 2 heads of *Pterostichus* sp., head of a beetle?); grass; moss.
1125. Female; Craibstone, Aberdeenshire; 29th July 1911: packed with remains of earth-worms; remains of a centipede (*Lithobius* sp.); fragment of Dipteron; head of weevil (*Sitones* sp.); remains of 3 ground beetles; 27 eggs of crane-fly; seeds—6 spurrey (*Spergula arvensis*), 2 sheep-sorrel (*Rumex Acetosella*).
1126. Female; Belhelvie, Aberdeenshire; 7th August 1911: decomposed vegetable matter; a very large number of eggs of crane-fly.
1127. Male; Belhelvie, Aberdeenshire; 7th August 1911: fish remains; forceps of 2 earwigs; remains of 7 weevils (*Sitones* sp.); 5 eggs of crane-fly.
1128. Male; Belhelvie, Aberdeenshire; 7th August 1911: decomposed vegetable matter.
1129. Male; Belhelvie, Aberdeenshire; 7th August 1911: grass; 1 seed of spurrey (*Spergula arvensis*); fragment of a beetle; wing of a crane-fly (*Tipula* sp.); 8 eggs of crane-fly.
1130. Male; Belhelvie, Aberdeenshire; 7th August 1911: grass; fragment of a weevil; a few eggs of crane-fly.
1131. Male; Scotston, Aberdeenshire; 21st August 1911: grass; 2 seeds (?); fragment of a weevil; 2 eggs of crane-fly.
1132. Female; Balgownie, Aberdeen; 21st November 1911: remains of 88 much-digested seeds.
1133. Female; Balgownie, Aberdeen; 21st November 1911: filled with husks and fragments of cereal; 7 corn grains; fragment of an insect; remains of a caterpillar.
1134. Female; Balgownie, Aberdeen; 21st November 1911: decomposed animal matter.
1135. Female; Balgownie, Aberdeen; 21st November 1911: fragments of seaweed (*Confervaceae*).
1136. Female; Parkhill, Aberdeenshire; 5th December 1911: remains of marine worms.
1137. Female; Parkhill, Aberdeenshire; 5th December 1911: remains of marine worms; hydroids; fragments of Crustaceans; 1 Dipteron (*Tetanocera* sp.); fragments of shell.
1138. Female; Parkhill, Aberdeenshire; 5th December 1911: remains of marine worms; hydroids; fragments of Crustaceans.
1139. Male; Parkhill, Aberdeenshire; 5th December 1911: remains of an earth-worm; fragments of a pupa case.
- 1140, 1141. 2 males; Parkhill, Aberdeenshire; 8th January 1912: both filled with kitchen refuse.
1142. Male; Parkhill, Aberdeenshire; 8th January 1912: a few fragments of potato; decomposed vegetable matter.
1143. Female; Parkhill, Aberdeenshire; 15th January 1912: fish remains; fragments of seaweed.

1144. Male; Parkhill, Aberdeenshire; 15th January 1912: 2 larvæ of Diptera; fish remains.
1145. Female; Parkhill, Aberdeenshire; 15th January 1912: remains of several earth-worms; 1 larva of a Dipteron (*Bibio* sp.).
1146. Male; Parkhill, Aberdeenshire; 15th January 1912: remains of an earth-worm; forceps of an earwig; seeds—1 knot-grass (*Polygonum aviculare*), 2 spurrey (*Spergula arvensis*), 3 ovaries of a small grass.
1147. Female; Parkhill, Aberdeenshire; 15th January 1912: remains of several earth-worms; thorax of an insect; 1 caterpillar (*Mamestra* ? *furva*); seeds—1 achene of a buttercup (*Ranunculus* sp.), 2 husks of seeds.
1148. Male; Murcar, Aberdeenshire; 6th February 1912: 59 sand-hoppers (*Talitrus locusta*); 5 shore-hoppers (*Orchestia littorea*); 2 weevil larvæ; 1 egg-case of a dog whelk; several fragments of turnip.
1149. Female; Murcar, Aberdeenshire; 6th February 1912: pieces of turnip; 1 corn grain; husks of cereal; moss; grass.
1150. Male; Murcar, Aberdeenshire; 6th February 1912: 66 sand-hoppers (*Talitrus locusta*); 16 pieces of Crustacea; 3 larvæ of Lamellicorn beetles (*Melolontha vulgaris*); 2 weevil larvæ.
1151. Male; Murcar, Aberdeenshire; 6th February 1912: a few fragments of potato; 1 seed of knot-grass (*Polygonum aviculare*); a few fragments of Crustacea.
1152. Male; Murcar, Aberdeenshire; 6th February 1912: 71 sand-hoppers (*Talitrus locusta*); 1 larva of a weevil; 1 larva of a Lamellicorn beetle (*Melolontha vulgaris*); 1 larva of a Dipteron; a few pieces of turnip.
1153. Male; Kincorth, Kincardineshire; 20th February 1912: filled chiefly with grass; seeds—1 spurrey (*Spergula arvensis*), 1 sheep-sorrel (*Rumex Acetosella*), 1 buttercup (*Ranunculus* sp.), 1 much-digested seed; remains of an earth-worm.
1154. Female; Parkhill, Aberdeenshire; 12th March 1912: remains of an earth-worm; fragments of a dung beetle.
1155. Female; Dinnet, Aberdeenshire; 4th May 1912: 1 wire-worm (*Agriotes* sp.); fragments of a weevil; decomposed vegetable matter.
1156. Female; Dinnet, Aberdeenshire; 4th May 1912: fragment of a grain husk.
1157. Female; Dinnet, Aberdeenshire; 4th May 1912: remains of earth-worms; remains of caddis-fly cases; remains of 3 caddis-flies; 1 larva of a weevil; 1 wire-worm (*Agriotes* sp.); fragment of elytra of a beetle; husk of a seed.
1158. Female; Dinnet, Aberdeenshire; 4th May 1912: remains of a ground beetle (*Pterostichus* sp.); 6 blood-worms (larvæ of *Chironomus* sp.).
1159. Male; Dinnet, Aberdeenshire; 4th May 1912: filled with earth; a few fragments of chitin.
1160. Female; Dinnet, Aberdeenshire; 7th May 1912: remains of earth-worms; beetles (3 *Cryptohypnus riparius*, 1 *Agriotes obscurus*).
1161. Female; Dinnet, Aberdeenshire; 7th May 1912: a few husks of cereal; a few fragments of vegetable matter; fragment of an earth-worm. In the intestine was found 1 husk of a seed.
1162. Female; Dinnet, Aberdeenshire; 7th May 1912: 1 corn grain; husks of 3 seeds (?); moss; grass; thoraces of 2 weevils.
1163. Female; Dinnet, Aberdeenshire; 7th May 1912: grass; husks of cereal; seeds—3 achenes of a buttercup (*Ranunculus* sp.), 1 seed (*Crucifera*), 1 husk of a seed.

1164. Female; Dinnet, Aberdeenshire; 7th May 1912: 5 corn grains; husks and fragments of cereal; fragments of chitin.
1165. Male; Dinnet, Aberdeenshire; 7th May 1912: a few husks of cereal; remains of 4 wire-worms; remains of 2 weevils (*Otiorhynchus* sp.).
1166. Female; Dinnet, Aberdeenshire; 7th May 1912: remains of earth-worms; 1 blow-fly (*Calliphora vomitoria*); 1 wire-worm (*Corymbites pectinicornis*); grass.
1167. Male; Dinnet, Aberdeenshire; 7th May 1912: grass.
1168. Male; Dinnet, Aberdeenshire; 7th May 1912: packed with remains of earth-worms; 1 beetle (*Pterostichus diligens*).
1169. Female; Dinnet, Aberdeenshire; 7th May 1912: beetles (24 *Cryptohypnus riparius*, 5 *Clivina fossor*, 3 *Athous hamorrhoidalis*, 3 *Xantholinus linearis*, 2 *X. punctulatus*, 2 *Oxytelus rugosus*, 1 *Bembidium littorale*, 1 head of a ground beetle); 3 weevils (*Barynotus schönherri*); 2 ground beetle larvæ (*Pterostichus* sp.); remains of a wire-worm; 1 larva of a Dipteron.
1170. Male; Dinnet, Aberdeenshire; 7th May 1912: fragments of a weevil.
1171. Male; Dinnet, Aberdeenshire; 7th May 1912: remains of earth-worms; 2 beetles (*Calathus melanocephalus*); 2 weevils (*Barynotus schönherri*); 2 Diptera (*Scatophaga stercoraria*); 2 pupa cases.
1172. Male; Parkhill, Aberdeenshire; 14th May 1912: 1 corn grain; remains of an earth-worm; remains of 3 "leather-jackets"; head of rove beetle; fragments of 2 beetles (?).
1173. Female; Parkhill, Aberdeenshire; 14th May 1912: remains of an earth-worm; 1 dung beetle (*Aphodius fimetarius*); head of a rove beetle; fragments of beetles; fragment of a Dipterous larva; moss.
1174. Female; Parkhill, Aberdeenshire; 14th May 1912: fragments of 7 beetles.
- 1175-1177. 2 males; 1 female; Parkhill, Aberdeenshire; 21st May 1912: filled with remains of earth-worms; in one also a little grass.
1178. Female; Parkhill, Aberdeenshire; 21st May 1912: 1 seed of knot-grass (*Polygonum aviculare*); a few pieces of grass.
1179. Male; Scotston, Aberdeenshire; 12th June 1912: refuse.
1180. Female; Scotston, Aberdeenshire; 12th June 1912: refuse; 2 Crustaceans (*Idotea emarginata*, *I. linearis*).
1181. Female; Scotston, Aberdeenshire; 18th June 1912: beetles (6 *Helophorus rugosus*, 1 *Megasternum boletophagum*, 1 *Philonthus varius*, 2 heads of rove beetles, head of a ground beetle); 1 weevil (*Sitones* sp.); remains of a Dipteron (*Anthomyiide*); 4 wire-worms (2 *Corymbites* sp., 2 ?); remains of a millepede (*Polydesmus* sp.); remains of an earth-worm; grass.
1182. Female; Scotston, Aberdeenshire; 18th June 1912: fragment of a weevil; cocoon of earth-worm.
1183. Female; Scotston, Aberdeenshire; 18th June 1912: fragments of chitin; remains of 1 larva; remains of a Dipteron (*Tipulidae*).
1184. Female; Scotston, Aberdeenshire; 18th June 1912: a few fragments of husks of cereal; fragments of chitin.
1185. Male; Scotston, Aberdeenshire; 18th June 1912: a few small fish vertebrae.
1186. Male; Scotston, Aberdeenshire; 18th June 1912: beetles (7 *Helophorus rugosus*, 2 *Sphaeridium scarabaeoides*); head of an insect; decomposed vegetable matter.
- 1187-1189. 2 males; 1 female; Murcar, Aberdeenshire; 25th June 1912: grass; in one also 1 seed of knot-grass (*Polygonum aviculare*).
1190. Male; Murcar, Aberdeenshire; 25th June 1912: 2 seeds of sheep-

- sorrel (*Rumex Acetosella*); fragments of a weevil (*Barynotus* sp.); decomposed vegetable matter.
1191. Male; Murcar, Aberdeenshire; 25th June 1912: 1 achene of a buttercup (*Ranunculus* sp.); decomposed vegetable matter.
1192. Male; Scotston, Aberdeenshire; 3rd July 1912: refuse.
1193. Male; Scotston, Aberdeenshire; 3rd July 1912: 15 sand furrow-makers (*Sulcator arenarius*); remains of an earth-worm; fragment of a wire-worm; thorax of a click beetle; grass.
1194. Male; Scotston, Aberdeenshire; 3rd July 1912: filled with bread; a piece of decomposed animal matter; remains of a hermit crab.
1195. Male; Scotston, Aberdeenshire; 3rd July 1912: 75 sand furrow-makers (*Sulcator arenarius*); tail of a herring; remains of marine worms; fragments of fish-bone.
1196. Male; Parkhill, Aberdeenshire; 10th July 1912: a few husks of cereal; fragment of a beetle.
1197. Male; Parkhill, Aberdeenshire; 10th July 1912: husks of cereal; decomposed vegetable matter; 2 seeds of sheep-sorrel (*Rumex Acetosella*).
1198. Male; Parkhill, Aberdeenshire; 10th July 1912: fragments of a weevil; fragments of fish-bone; bone of a frog.
1199. Male; Parkhill, Aberdeenshire; 10th July 1912: remains of earth-worms; fragments of a weevil.
1200. Male; Parkhill, Aberdeenshire; 10th July 1912: fragments of fish-bone; fragments of a weevil.
1201. Male; Parkhill, Aberdeenshire; 10th July 1912: fragments of leaves; grass; moss.
1202. Male; Parkhill, Aberdeenshire; 10th July 1912: 8 Diptera (5 *Scatophaga stercoraria*, 3 *Scatophaga* sp.); 3 husks of seeds; decomposed vegetable matter.
1203. Male; Locality (?); 16th July 1912: 4 sand furrow-makers (*Sulcator arenarius*); remains of a common shrimp (*Crangon vulgaris*).
- 1204-1209. 3 males; 3 females; Locality (?); 16th July 1912: all packed with refuse. In one also fragments of chitin.
1210. Female; Locality (?); 16th July 1912: potato; 1 sand furrow-maker (*Sulcator arenarius*); decomposed animal matter.
1211. Male; Craibstone, Aberdeenshire; 20th July 1912: beetles (1 *Pterostichus niger*, 2 heads of rove beetles); turnip; fragments of leaves; grass.
1212. Sex (?); Craibstone, Aberdeenshire; 20th July 1912: remains of 2 beetles (1 *Tachyporus* sp., 1 rove beetle); remains of 1 weevil (*Sitones* sp.); 1 much-digested seed; grass.
1213. Male; Craibstone, Aberdeenshire; 20th July 1912: remains of earth-worms; head of a weevil (*Barynotus* sp.); grass; 1 seed (*Leguminosae*); piece of root of a plant.
1214. Female; Craibstone, Aberdeenshire; 20th July 1912: remains of 11 "leather-jackets"; remains of 3 weevils (2 *Barynotus* sp., 1 *Sitones* sp.); remains of 2 ground beetles; 1 centipede; 1 clover leaf; seeds—10 achenes of strawberry, 1 *Persicaria* (*Polygonum Persicaria*); grass; remains of an earth-worm.
1215. Female; Countesswells, Aberdeenshire; 23rd July 1912: fragments of chitin; a few fragments of vegetable matter.
1216. Female; Craibstone, Aberdeenshire; 27th July 1912: remains of 28 weevils (*Sitones* sp.); a few fragments of vegetable matter.
- 1217, 1218. 2 females; Parkhill, Aberdeenshire; 30th July 1912: both filled with grass; a few fragments of clover leaves; in one also an elytron of a beetle.
1219. Female; Skene, Aberdeenshire; 6th August 1912: remains of a dung beetle (*Aphodius* sp.); seeds—3 sheep-sorrel (*Rumex Ace-*

- tosella*), 1 spurrey (*Spergula arvensis*); fragments of vegetable matter.
1220. Female; Skene, Aberdeenshire; 6th August 1912: remains of 2 beetles (*Aphodius* sp.); 4 eggs of crane-fly; 2 seeds of spurrey (*Spergula arvensis*).
1221. Male; Skene, Aberdeenshire; 6th August 1912: remains of a beetle (*Aphodius* sp.); fragments of vegetable matter.
1222. Male; Skene, Aberdeenshire; 6th August 1912: remains of a weevil (*Sitones* sp.); 3 Diptera (1 *Bibio Pomonæ*, 2 *Tipula maculosa*); remains of 11 May flies (*Ephemeridae*); a few eggs of crane-fly.
1223. Male; Parkhill, Aberdeenshire; 17th September 1912: remains of 7 common shrimps (*Crangon vulgaris*); 73 barley grains; husks and fragments of cereal.
1224. Male; Craibstone, Aberdeenshire; 21st September 1912: remains of a weevil (*Sitones* sp.); 1 seed of sheep-sorrel (*Rumex Acetosella*); grass.
1225. Female; Parkhill, Aberdeenshire; 24th September 1912: a few fragments of chitin; husks of cereal; grass.
1226. Female; Scotston, Aberdeenshire; 9th October 1912: 5 corn grains; husks and fragments of cereal.
1227. Male; Parkhill, Aberdeenshire; 15th October 1912: 1 Dipteron (*Scatophaga stercoraria*); fragments of a wire-worm; remains of fish.
1228. Male; Craibstone, Aberdeenshire; 27th December 1912: fragments of corn grains.
1229. Male; Craibstone, Aberdeenshire; 27th December 1912: fragments of grass and roots of grass; fragment of a shell.
1230. Male; Craibstone, Aberdeenshire; 27th December 1912: fragments of moss.
1231. Male; Craibstone, Aberdeenshire; 27th December 1912: a few husks of cereal; 2 seeds of spurrey (*Spergula arvensis*); fragment of a seed (?).
- 1232-1242. 11 birds, examined 5th July 1911, 12th December 1911, 4th May 1912, 21st May 1912, 25th June 1912, 10th July 1912, 16th July 1912, 20th July 1912, 17th September 1912, and 9th October 1912, were found empty.

On 22nd July 1912, at Forvie Sands, a young bird a few days old disgorged 16 May flies (*Ephemeru vulgata*) when handled.

Summary.—53 contained insects of injurious group; 40, indifferent group; 15, beneficial group; 28, earth-worms; 13, Crustacea; 9, fish; 4, marine worms; 2, hydroids; 2, molluscs; 2, centipedes; 1, millepede; 1, cocoon of earth-worm; 31, grass; 27, cereal; 25, seeds; 5, moss; 4, potato; 4, turnip; 2, seaweed.

COMMON GULL (*Larus canus*, Linn.).

1243. Male; Locality (?); 13th March 1911: crumbs of bread; grass.
1244. Female; Craigdam, Aberdeenshire; 18th March 1911: remains of an earth-worm; grass.
1245. Female; Craibstone, Aberdeenshire; 4th April 1911: 25 corn grains; husks and fragments of cereal; shells and pieces of shells of the edible mussel (*Mytilus edulis*).
1246. Female; Parkhill, Aberdeenshire; 22nd May 1911: 10 sand furrow-makers (*Sulcator arenarius*); remains of many marine worms; 3 corn grains; husks of cereal.
1247. Female; Skeabost, Skye; 23rd June 1911: remains of earth-worms; beetles (4 *Dascillus corvinus*, 2 *Athous subfuscus*, 2 *Amara communis*,

- 2 *Cryptohypnus riparius*, 1 *Corymbites ceneus*, 1 *Pterostichus vulgaris*, fragments of rove beetles; pieces of skins of 3 caterpillars.
1248. Sex (?); Skeabost, Skye; 23rd June 1911: fragments of 3 weevils (*Barynotus* sp.); grass.
1249. Male; Ardcloch, Nairnshire; 29th June 1911: a few husks of cereal; a few fragments of potato skin.
1250. Female; Belhelvie, Aberdeenshire; 8th August 1911: a field-mouse (*Mus sylvaticus*).
1251. Male; Craibstone, Aberdeenshire; 8th September 1911: 1 beetle (*Calathus melanocephalus*); heads of 58 small weevils (*Sitones* sp.); fragment of an otolith.
1252. Male; Durris, Aberdeenshire; 14th September 1911: remains of earth-worms; 3 whole and remains of 6 beetles (*Aphodius contaminatus*); a few husks of cereal; 1 seed of spurrey (*Spergula arvensis*); grass.
1253. Female; Craibstone, Aberdeenshire; 27th September 1911: remains of earth-worms; 4 whole and remains of 3 wire-worms; fragments of several elytra of beetles; 16 corn grains; husks of cereal; a few pieces of potato.
1254. Female; Craibstone, Aberdeenshire; 27th September 1911: filled chiefly with husks and a few fragments of cereal; 2 barley grains; 2 achenes of buttercup (*Ranunculus ?repens*); remains of 6 wire-worms; remains of 1 earth-worm; fragment of a beetle; remains of a Dipteron (*Anthomyiidae*).
1255. Male; Craibstone, Aberdeenshire; 27th September 1911: filled with husks and a few fragments of cereal; 10 grains of corn · 3 grains of barley; remains of earth-worms; elytron of a beetle.
1256. Male; Turriff, Aberdeenshire; 28th September 1911: remains of a common vole (*Microtus agrestis*); remains of an earth-worm; 1 corn grain and a few husks of cereal; seeds—12 spurrey (*Spergula arvensis*), 8 achenes of a buttercup (*Ranunculus repens*), 3 knot-grass (*Polygonum aviculare*), 1 sheep-sorrel (*Rumex Acetosella*).
1257. Female; Turriff, Aberdeenshire; 28th September 1911: filled with remains of earth-worms; remains of an earwig; grass; seeds—30 spurrey (*Spergula arvensis*), 5 sheep-sorrel (*Rumex Acetosella*).
1258. Female; Turriff, Aberdeenshire; 28th September 1911: filled with remains of earth-worms; grass.
1259. Male; Turriff, Aberdeenshire; 28th September 1911: remains of earth-worms; decomposed vegetable matter; fragments of chitin.
1260. Male; Craibstone, Aberdeenshire; 11th November 1911: 2 whole and remains of a third wire-worm; fragments of the skins of 12 larvæ (? *Coleoptera*); remains of a turnip-flea beetle (*Phyllotreta undulata*); moss; seeds—1 spurrey (*Spergula arvensis*), 1 knot-grass (*Polygonum aviculare*), 1 black bindweed (*Polygonum Convolvulus*), 1 white goosefoot (*Chenopodium album*).
1261. Male; Balgownie, Aberdeen; 21st November 1911: decomposed animal matter; fragments of shell.
- 1262, 1263. 1 female; 1 male; Balgownie, Aberdeen; 21st November 1911: a few husks of cereal; grass.
- 1264, 1265. 1 female; 1 male; Balgownie, Aberdeen; 21st November 1911: in each a few seeds of sheep-sorrel (*Rumex Acetosella*).
1266. Male; Scotston, Aberdeenshire; 28th November 1911: fragments of a crab; fragments of seaweed; 1 seed of knot-grass (*Polygonum aviculare*).
1267. Female; Scotston, Aberdeenshire; 28th November 1911: remains of a large earth-worm; moss; 1 otolith; fragments of fish-bone.
1268. Male; Craibstone, Aberdeenshire; 2nd December 1911: remains of a wire-worm; grass.

1269. Male ; Parkhill, Aberdeenshire ; 5th December 1911 : remains of an earth-worm ; remains of an earwig ; pupa case of a Dipteron ; head of an immature beetle ; grass ; decomposed vegetable matter.
1270. Male ; Parkhill, Aberdeenshire ; 5th December 1911 : remains of earth-worms ; 1 weevil (*Otiorrhynchus picipes*) ; grass.
1271. Female ; Parkhill, Aberdeenshire ; 5th December 1911 : remains of an earth-worm ; 1 otolith ; seeds—6 spurrey (*Spergula arvensis*), 1 knawel (*Scleranthus annuus*), 1 knot-grass (*Polygonum aviculare*), 1 sheep-sorrel (*Rumex Acetosella*).
1272. Female ; Parkhill, Aberdeenshire ; 5th December 1911 : fragment of a marine worm.
1273. Female ; Parkhill, Aberdeenshire ; 8th January 1912 : 2 seeds—sheep-sorrel (*Rumex Acetosella*), Persicaria (*Polygonum Persicaria*) ; fragments of fruit, probably from refuse.
1274. Female ; Parkhill, Aberdeenshire ; 8th January 1912 : filled with kitchen refuse.
1275. Female ; Parkhill, Aberdeenshire ; 8th January 1912 : a few pieces of potato ; seeds—3 plantain (*Plantago ? major*), 1 endocarp of raspberry (*Rubus Idæus*) ; forceps of an earwig.
1276. Female ; Parkhill, Aberdeenshire ; 8th January 1912 : fragments of fish-bone ; 2 otoliths ; decomposed animal matter.
1277. Female ; Parkhill, Aberdeenshire ; 8th January 1912 : pieces of turnip.
1278. Female ; Parkhill, Aberdeenshire ; 8th January 1912 : husks of cereal ; 1 seed of a composite (*Cnicus* sp.) ; potato.
1279. Male ; Parkhill, Aberdeenshire ; 8th January 1912 : 1 larva of a Dipteron ; potato ; roots of grass.
1280. Female ; Parkhill, Aberdeenshire ; 15th January 1912 : grass ; seeds—3 spurrey (*Spergula arvensis*), 1 knot-grass (*Polygonum aviculare*), 1 husk of a seed (?) ; a piece of fat.
1281. Female ; Parkhill, Aberdeenshire ; 15th January 1912 : fragments of fish-bone.
1282. Female ; Parkhill, Aberdeenshire ; 15th January 1912 : remains of an earth-worm ; grass ; refuse.
1283. Female ; Parkhill, Aberdeenshire ; 15th January 1912 : grass ; decomposed vegetable matter.
1284. Male ; Blackburn, Aberdeenshire ; 17th January 1912 : remains of earth-worms ; 3 larvæ of ground beetles (*Carabus* sp.) ; thorax of a beetle ; seeds—6 spurrey (*Spergula arvensis*), 2 black bindweed (*Polygonum Convolvulus*).
1285. Male ; Blackburn, Aberdeenshire ; 17th January 1912 : remains of earth-worms ; 1 wire-worm ; 2 skins of caterpillars (*Mamestra* sp.) ; 3 larvæ of a weevil.
1286. Female ; Blackburn, Aberdeenshire ; 17th January 1912 : remains of an earth-worm ; 6 wire-worms ; 1 larva of a Lamellicorn beetle ; 2 weevil larvæ ; beetles (1 *Ocytus brunnipes*, 1 *Philonthus politus*, remains of 3 rove beetles) ; grass ; moss.
1287. Female ; Blackburn, Aberdeenshire ; 17th January 1912 : remains of earth-worms ; 5 wire-worms ; 2 ground beetle larvæ (*Pterostichus* sp.) ; 2 weevils (*Barynotus schönherri*) ; beetles (1 *Anchomenus parumpunctatus*, 1 *Clivina fossor*, 2 heads of beetles ?) ; 3 empty cocoons of earth-worm.
1288. Female ; Blackburn, Aberdeenshire ; 17th January 1912 : remains of earth-worms ; 3 larvæ of a weevil ; thorax of a click beetle ; forceps of an earwig ; empty cocoon of earth-worm ; grass roots.
1289. Male ; Blackburn, Aberdeenshire ; 17th January 1912 : remains of 20 "leather-jackets" ; remains of 9 larvæ of Diptera ; 5 Dipterous larvæ (*Muscida*) ; remains of 9 ground beetle larvæ (7 *Pterostichus*

- sp., 2 ♀); 1 wire-worm; remains of a click beetle; 2 cocoons of earth-worm.
1290. Female; Maldon, Essex; 23rd January 1912: 1 blade of grass; 3 fragments of egg-shell.
1291. Female; Murcar, Aberdeenshire; 6th February 1912: remains of a crab.
1292. Female; Murcar, Aberdeenshire; 6th February 1912: a few fragments of potato; fragments of seaweed.
- 1293, 1294. 2 males; Murcar, Aberdeenshire; 6th February 1912: fragments of seaweed and of mussel-shell.
1295. Female; Balgownie, Aberdeen; 19th March 1912: fragments of a weevil.
1296. Female; Dinnet, Aberdeenshire; 25th April 1912: remains of an earth-worm; 1 larva of a Dipteron; 1 ground beetle larva (*Pterostichus* sp.); beetles (3 *Clivina fossor*, 2 *C. collaris*, 2 *Xantholinus linearis*, 1 *Calathus melanocephalus*, 1 *Cryptohypnus riparius*); 1 millipede (*Polydesmus complanatus*); 1 spider (*Nerine* sp.); a few fragments of cereal; grass.
1297. Female; Scotston, Aberdeenshire; 18th June 1912: potato.
1298. Male; Skene, Aberdeenshire; 6th August 1912: fragments of husks of cereal; 1 ichneumon fly.
1299. Male; Skene, Aberdeenshire; 6th August 1912: 2 seeds of sheep-sorrel (*Rumex Acetosella*); fragments of cereal; piece of a clover leaf.
- 1300, 1301. 2 females; Skene, Aberdeenshire; 6th August 1912: fragments of cereal; fragments of beetles and weevils.
1302. Female; Skene, Aberdeenshire; 6th August 1912: grass; a few fragments of chitin.
1303. Female; Skene, Aberdeenshire; 6th August 1912: 1 seed of spurrey (*Spergula arvensis*); a few fragments of grass and of clover leaves.
1304. Female; Skene, Aberdeenshire; 6th August 1912: 1 beetle (*Cryptohypnus riparius*); head of rove beetle; 1 seed of spurrey (*Spergula arvensis*); fragments of vegetable matter.
1305. Female; Skene, Aberdeenshire; 6th August 1912: fragments of husks of cereal; grass.
1306. Female; Skene, Aberdeenshire; 6th August 1912: a few fragments of decomposed vegetable matter.
1307. Male; Skene, Aberdeenshire; 20th August 1912: remains of 2 weevils (*Sitones* sp.); head of a beetle (?); seeds—9 sheep-sorrel (*Rumex Acetosella*), 2 spurrey (*Spergula arvensis*); 2 whole and fragments of clover leaves; moss; grass.
1308. Male; Craibstone, Aberdeenshire; 21st September 1912: 102 barley grains; husks and fragments of cereal; a few pieces of grass; fragment of a caterpillar.
1309. Male; Craibstone, Aberdeenshire; 21st September 1912: 35 corn grains; husks and fragments of cereal; a few fragments of leaves; remains of earth-worms.
1310. Female; Craibstone, Aberdeenshire; 28th September 1912: 28 barley grains; husks and fragments of cereal; grass; 2 weevils (*Sitones* sp.); 3 snails (*Vitrina pellucida*).
1311. Female; Craibstone, Aberdeenshire; 28th September 1912: remains of 25 Diptera (*Anthomyidae*); beetles (1 *Aphodius prodromus*, 1 *Philonthus laminatus*); 1 weevil (*Sitones* sp.); a few husks of cereal; grass; moss.
1312. Female; Parkhill, Aberdeenshire; 1st October 1912: a few fragments of vegetable matter.
1313. Female; Craibstone, Aberdeenshire; 5th October 1912: remains of earth-worms; remains of a slug (*Agriolimax* sp.); 5 snails (*Vit-*

- rina pellucida*); 2 beetles (*Aphodius contaminatus*); 1 harvestman (*Phalangium* sp.); 5 Diptera (2 *Scatophaga stercoraria*, 1 *Borborus* sp., 1 *Homalomyia* sp., 1 *Anthomyia*); grass; seeds—7 spurrey (*Spergula arvensis*), 4 sheep-sorrel (*Rumex Acetosella*), 1 buttercup (*Ranunculus* sp.), 1 ovary of a small grass.
1314. Female; Craibstone, Aberdeenshire; 5th October 1912: 105 corn grains; husks and fragments of cereal.
1315. Female; Craibstone, Aberdeenshire; 5th October 1912: 3 barley grains; husks of cereal; grass; seeds—2 spurrey (*Spergula arvensis*), 1 sheep-sorrel (*Rumex Acetosella*); remains of a beetle (*Geotrupes stercorarius*).
1316. Female; Skene, Aberdeenshire; 8th October 1912: grass; seeds—1 spurrey (*Spergula arvensis*), 1 knot-grass (*Polygonum aviculare*), 1 sheep-sorrel (*Rumex Acetosella*), 1 nutlet (*Myosotis* sp.); head of rove beetle.
1317. Male; Craibstone, Aberdeenshire; 27th December 1912: wall of a seed vessel; refuse.
- 1318-1320. Three birds, examined 8th January 1912 and 6th February 1912, were found empty.

Summary.—28 contained grass; 23, cereal; 22, seeds; 7, potato; 5, moss; 4, seaweed; 1, turnip; 25, insects of injurious group; 20, indifferent group; 8, beneficial group; 22, earth-worms; 5, fish; 3, molluscs; 3, crustacea; 3, cocoons of earth-worm; 2, marine worms; 2, small mammals; 1, harvestman; 1, millepede; 1, spider.

HERRING GULL (*Larus argentatus*, J. F. Gmelin).

1321. Female; Loirston, Kincardineshire; 28th January 1911: skins of 7 "leather-jackets" (larvæ of crane-fly).
1322. Male; Balmedie, Aberdeenshire; 13th February 1911: grass.
1323. Female; Cove, Kincardineshire; 29th March 1911: 88 corn grains; fragments of cereal; 4 snail's eggs; pieces of cheese.
1324. Male; Craibstone, Aberdeenshire; 8th April 1911: head of a cured herring; fish-bones; bread; a few pieces of grass.
1325. Sex (?); Loirston, Kincardineshire; 19th May 1911: remains of earth-worms; a few husks of cereal.
1326. Male; Belhelvie, Aberdeenshire; 8th August 1911: a few pieces of grass; moss; remains of a flower (? *scabious*); seeds—1 spurrey (*Spergula arvensis*), 1 sheep-sorrel (*Rumex Acetosella*); fragment of a weevil.
1327. Female; Craibstone, Aberdeenshire; 21st August 1911: remains of an earth-worm; fragments of ground beetles (*Pterostichus* sp.); fragment of a beetle (?); 1 egg of a Tipulid; 1 seed of spurrey (*Spergula arvensis*); grass; moss.
1328. Female; Aberdeen Harbour; 25th August 1911: fragments of fish-bone; piece of an otolith.
1329. Female; Scotston, Aberdeenshire; 14th November 1911: a few husks of cereal; 3 seeds of spurrey (*Spergula arvensis*); fragments of vegetable matter; 1 weevil (*Barynotus schönherri*); remains of a click beetle; remains of 1 beetle larva; 2 fragments of skins of larvæ.
1330. Male; Scotston, Aberdeenshire; 14th November 1911: grass; moss; remains of an earth-worm; fragment of a beetle.
1331. Male; Balgownie, Aberdeen; 21st November 1911: filled with pieces of potato; a few pieces of turnip; fragments of fish-bone.
1332. Female; Balgownie, Aberdeen; 21st November 1911: fish-bones; 2 otoliths.

1333. Male ; Balgownie, Aberdeen ; 21st November 1911 : filled chiefly with pieces of apple ; seeds of apple ; bread.
1334. Female ; Balgownie, Aberdeen ; 21st November 1911 : kitchen refuse.
1335. Female ; Craibstone, Aberdeenshire ; 25th November 1911 : pieces of turnip.
1336. Female ; Craibstone, Aberdeenshire ; 2nd December 1911 : remains of several earth-worms ; remains of 2 wire-worms ; 2 weevil larvæ ; remains of a shrew (*Sorex vulgaris*) ; 5 seeds of spurrey (*Spergula arvensis*) ; moss.
1337. Male ; Elgin, Morayshire ; 22nd December 1911 : remains of earth-worms ; grass.
1338. Female ; Parkhill, Aberdeenshire ; 15th January 1912 : kitchen refuse.
1339. Male ; Murcar, Aberdeenshire ; 6th February 1912 : fragments of fish ; fragments of mussel shell.
1340. Female ; Parkhill, Aberdeenshire ; 13th February 1912 : remains of earth-worms ; head of rove beetle ; grass ; seeds—26 spurrey (*Spergula arvensis*), 4 sheep-sorrel (*Rumex Acetosella*), 7 Persicaria (*Polygonum Persicaria*), 1 knot-grass (*P. aviculare*).
1341. Male ; Parkhill, Aberdeenshire ; 13th February 1912 : decomposed animal matter.
1342. Female ; Kincorth, Kincardineshire ; 20th February 1912 : 1 snail (*Vitrina pellucida*) ; 1 larva of a stone-fly ; fragments of a crab ; piece of a worm-tube ; a few pieces of potato ; grass.
1343. Male ; Parkhill, Aberdeenshire ; 6th March 1912 : filled with refuse.
1344. Male ; Balgownie, Aberdeen ; 19th March 1912 : pieces of turnip.
1345. Male ; Balgownie, Aberdeen ; 19th March 1912 : a few pieces of turnip ; a few fish vertebræ ; 3 eggs of a snail.
1346. Male ; Balgownie, Aberdeen ; 19th March 1912 : 1 wire-worm ; grass.
1347. Male ; Balgownie, Aberdeen ; 19th March 1912 : pieces of turnip.
1348. Male ; Parkhill, Aberdeenshire ; 14th May 1912 : 74 corn grains ; husks of grain ; 1 wire-worm (*Athous hæmorrhoidalis*) ; fish vertebræ.
1349. Sex (?) ; Parkhill, Aberdeenshire ; 14th May 1912 : 193 corn grains ; husks and fragments of cereal.
1350. Sex (?) ; Parkhill, Aberdeenshire ; 21st May 1912 : husks of cereal ; grass ; a few fragments of leaves ; 2 pieces of bone.
1351. Female ; Scotston, Aberdeenshire ; 3rd July 1912 : fragments of acorn shells.
1352. Female ; Scotston, Aberdeenshire ; 3rd July 1912 : remains of a swimming crab (*Portunus* sp.) ; seaweed.
- 1353-1355. 2 males ; 1 female ; Craibstone, Aberdeenshire ; 21st September 1912 : all packed with cereal. One contained 299 fresh grains of barley.
1356. Female ; Craibstone, Aberdeenshire ; 21st September 1912 : remains of 1 beetle (*Aphodius* sp.) ; a few fragments of cereal ; decomposed vegetable matter.
1357. Male ; Parkhill, Aberdeenshire ; 24th September 1912 : 14 corn grains ; husks of cereal ; fragments of mussel shell.
1358. Female ; Parkhill, Aberdeenshire ; 24th September 1912 : grass ; husks of cereal ; fragments of leaves.
1359. Male ; Parkhill, Aberdeenshire ; 1st October 1912 : 73 corn grains ; husks and fragments of cereal ; grass.
1360. Male ; Parkhill, Aberdeenshire ; 1st October 1912 : a few fragments of leaves ; grass ; 3 seeds of spurrey (*Spergula arvensis*).

1361. Female; Parkhill, Aberdeenshire; 1st October 1912: 106 corn grains; husks of cereal.
1362. Female; Craibstone, Aberdeenshire; 5th October 1912: 73 barley grains; husks and fragments of cereal; head of rove beetle.
1363. Female; Scotston, Aberdeenshire; 9th October 1912: a few husks of cereal; a few fragments of leaves; grass; 1 seed of spurrey (*Spergula arvensis*); a few fish vertebræ.
1364. Female; Craibstone, Aberdeenshire; 12th October 1912: 47 barley grains; 9 corn grains; husks and fragments of cereal; 1 rove beetle (*Philonthus laminatus*); fragments of chitin; grass.
1365. Male; Parkhill, Aberdeenshire; 15th October 1912: 7 corn grains; husks of cereal.
1366. Male; Parkhill, Aberdeenshire; 15th October 1912: packed with remains of fish (*Gadidæ*).
1367. Female; Parkhill, Aberdeenshire; 15th October 1912: kitchen refuse.
1368. Male; Craibstone, Aberdeenshire; 9th November 1912: 1 barley grain; fragments of vegetable matter; some sheep's wool.
1369. Female; Craibstone, Aberdeenshire; 9th November 1912: 49 barley grains; husks and fragments of cereal.
1370. Female; Craibstone, Aberdeenshire; 9th November 1912: 6 whole and remains of several earth-worms; remains of 2 ground beetles (*Pterostichus* sp.).
1371. Male; Craibstone, Aberdeenshire; 9th November 1912: 8 barley grains; husks of cereal; grass; some sheep's wool.
1372. Female; Craibstone, Aberdeenshire; 16th November 1912: 43 corn grains; 2 barley grains; husks and fragments of cereal; 1 seed of sheep-sorrel (*Rumex Acetosella*); fragments of a weevil.
1373. Female; Craibstone, Aberdeenshire; 27th December 1912: 48 corn grains; husks and fragments of cereal.

Summary.—23 contained cereal; 18, grass; 8, seeds; 5, turnip; 4, moss; 2, potato; 1, apple; 1, bread; 9, insects of injurious group; 7, indifferent group; 3, beneficial group; 8, fish; 7, earth-worms; 3, molluscs; 3, crustacea; 1, mammal.

LESSER BLACK-BACKED GULL (*Larus fuscus*, Linn.).

1374. Male; Locality (?); 2nd June 1911: beetles (9 *Cryptohypnus riparius*, remains of 2 ground beetles); fragments of 2 weevils; remains of 1 "leather-jacket" (larva of a crane-fly); a few fragments of fish-bone.
1375. Female; Belhelvie, Aberdeenshire; 8th August 1911: fragments of a crane-fly (*Tipula* sp.); remains of a Dipteron (*Muscidæ*); a small piece of wood.

Summary.—2 contained insects of injurious group; 1, indifferent group; 1, beneficial group; 1, fish.

GREAT BLACK-BACKED GULL (*Larus Marinus*, Linn.).

1376. Male; Scotston, Aberdeenshire; 13th January 1911: fish-bones; fragments of shell.
1377. Female; Parkhill, Aberdeenshire; 22nd May 1911: remains of a fish (*Gadidæ*); remains of a starfish.
1378. Male; Belhelvie, Aberdeenshire; 8th August 1911: fragments of fish-bone; fragments of mussel shell.
1379. Male; Port-Erròl, Aberdeenshire; 19th September 1911: fragments

of fish-bone ; 2 otoliths ; elytron of a beetle ; remains of a weevil (*Otiorrhynchus* sp.) ; egg-case of a dog whelk.

1380. Male ; Murcar, Aberdeenshire ; 25th June 1912 : fragments of fish-bone.

Summary :—5 contained fish ; 2, shell ; 1, egg-case of whelk ; 1, insect of injurious group ; 1, starfish.

KITTIWAKE GULL (*Rissa tridactyla*, Linn.).

1381. Female ; Belhelvie, Aberdeenshire ; 7th August 1911 : grass ; 4 seeds of oat (*Avena elatior*) ; fragment of a weevil ; 1 Dipteron (*Mosillus* sp.).
 1382. Male ; Scotston, Aberdeenshire ; 21st August 1911 : fragments of fish-bones.
 1383. Female ; Craibstone, Aberdeenshire ; 28th September 1911 : 25 corn grains ; husks of cereal ; 2 wire-worms ; remains of a ground beetle larva ; 1 weevil (*Barynotus schönherri*) ; beetles (2 *Corymbites æneus*, 1 *Calathus melanocephalus*).
 1384. Female ; Craibstone, Aberdeenshire ; 21st October 1911 : remains of 8 beetles (*Cryptohypnus riparius*) ; 5 achenes of a buttercup (*Ranunculus ? repens*) ; moss.
 1385. Male ; Locality (?) ; 16th July 1912 : potato ; fragments of fish-bone ; seaweed.

Summary :—3 contained insects of injurious group ; 1, beneficial group ; 1, indifferent group ; 2, fish ; 2, seeds ; 1, cereal ; 1, potato ; 1, grass : 1, moss.

RAZORBILL (*Alca torda*, Linn.).

1386. Male ; Don Mouth, Aberdeen ; 16th January 1911 : packed with remains of sand eels (*Ammodytes tobianus*) ; fragments of 2 crustaceans (*Amphipoda*).
 1387. Female ; Balmedie, Aberdeenshire ; 11th February 1911 : packed with remains of sand eels (*Ammodytes tobianus*) ; fragments of crustaceans (*Amphipoda*).

Summary :—2 contained fish ; 2, crustaceans.

· GUILLEMOT (*Uria troile*, Linn.).

- 1388, 1389. 2 birds, examined 26th January 1911 and 16th February 1912, were found empty.

On 29th July 1912, three sand eels (*Ammodytes tobianus*) were taken from a ledge of the Dunbui Rock, Cruden Bay, beside young guillemots not more than a day or two old. Many more specimens of these fish were seen on other ledges of the rock beside the young birds.

LITTLE GREBE (*Podiceps fluvialis*, Tunstall).

1390. Female ; Stoneywood, Aberdeenshire ; 9th February 1912 : beetles (1 *Calathus cisteloides*, 1 *Pterostichus diligens*) ; fragment of a Dipteron ; grass ; decomposed vegetable matter.

The birds of greatest interest to the agriculturist are the starling, the rook, and the different species of gull.

Examinations have been made of one hundred and seven starlings, and the result is the same as that of Mr Collinge (4)

and of Mr Hammond (9). The staple food of the starling is evidently insect matter, and throughout the year they destroy large numbers of destructive larvæ, beetles, and weevils. During autumn cereal food is also taken. In September 1911 twenty birds were sent from the district of Cruden with a request for information as to the amount of grain found in their crops. In every bird grain was found, and in ten of them husks of grain proved to be the principal food, but in the remainder insect matter predominated. In no case was the food entirely vegetable. In the beginning of February 1912 a number of starlings were shot during a snowstorm, and in almost every case the bulk of the food consisted of grain and seeds of weeds. The grain was in fragments, but the weed seeds showed little or no trace of digestion. This corresponds with the record for starlings shot in the same month in 1910 (7).

Since the publication in 1896 of the Report on the food of starlings by Mr Gilmour (8), these birds have increased in number enormously. This increase is probably due to the migration to our coasts of the continental starling. As a natural result the feeding habits have changed to a certain extent, and the verdict of Mr Gilmour (8), who said that this species "is a bird rather to be fostered than destroyed; he is a benefactor rather than a foe to the farmer," must now be modified.

The rook is not looked upon with favour by the majority of farmers. It does an immense amount of harm and a considerable amount of good, and is one of the most difficult birds to which to assign its true economic value.

The number of rooks examined is two hundred and eighty-eight, and includes representatives for every month of the year, although by far the largest number were received in April, May, and June.

The following table shows the number of times each kind of food was found:—

Kind of Food.	No. of times found.
Grain	178
Potato	121
Turnip	5
Seeds, fruit, leaves, grass, &c.	155
Injurious insects	173
Indifferent insects	102
Beneficial insects	34
Other animal matter	40

The records of the birds shot during seed-time prove that they consume large quantities of grain, as many as 326 fresh corn grains being found in one crop. Towards the middle of

May the amount of grain diminishes, and its place is taken by potato. In June and July insects are the principal food. During harvest grain is again found to predominate, while in the end of the year potato once more occurs frequently.

As an example of the variety of food found in birds shot at the same time and place, six rooks sent from Skene on 30th May 1911 are taken. Three of these were filled with potato only, two with husks and fragments of cereal, a few pieces of potato, and a few fragments of chitin, one with 20 "leather-jackets," 17 Diptera, 2 weevils, a few husks of cereal, a few clover leaves, and grass. In March 1912, of two rooks from Countesswells, the first was filled with turnip and a little potato, while the second contained 226 larvæ of a Dipteron (*Bibio* sp.), 2 ground-beetle larvæ, 1 "leather-jacket," 1 wire-worm, 1 weevil larva, remains of an earth-worm, a few husks of cereal, and a few pieces of turnip.

The rook is guilty of doing much harm, about which *post mortem* examinations give little or no information. In their search for grubs they pull up large quantities of turnips after they have been singled, and in the winter they peck holes in the roots, causing them to rot. They destroy many potatoes by unearthing them at seed-time and later, and although egg-shell was found only three times they are known to plunder the nests of game-birds, skylarks, and other ground-building species.

In writing of birds that injure grain in the United States of America, Mr F. E. L. Beal (2) states: "If it be admitted that birds do not as a rule display an inordinate appetite for grain, the question naturally arises: What is the cause of the tremendous ravages they sometimes commit? Both stomach examination and field observation point to the same answer: Too many birds of the same or closely allied species are gathered together within a limited area." To quote Mr Collinge (5), "no words could be more pertinent than these" when applied to the case of the rook. At the present time we have too many rooks, and, as with the starling, a numerical increase has led to a change in diet, so that what Miss Ormerod (11), writing on this question in 1882, predicted has come to pass.

In the north-eastern counties of Scotland there has been considerable discussion as to the usefulness of gulls.

The Herring Gull is our ordinary "sea-gull," and during the last fifteen years the numbers coming inland have largely increased. Fifty-three have been examined, and of these twenty-three contained grain, five turnip, and two potato.

It is of interest to note that the Herring Gull ejects the husks of grain in oval-shaped pellets. These are generally found beside water near where the gulls are feeding, and have to be picked

up at once, as they are soon demolished by small birds. In the spring of 1913 a large number of gulls were watched pecking at the turnip put out in the fields for cattle. In a short time the turnip was ejected in the same way as the grain husk, and some of these pellets were taken for examination. Professor Hendrick carried out a partial analysis which showed that a certain amount of the soluble material, including a considerable proportion of the sugar and the soluble nitrogenous material, had been sucked out of the turnip by the birds.

The Common Gull is found here only in moderate numbers, and is considerably smaller than the Herring Gull. There are seventy-eight records of this species. Grass, cereal food, and seeds occurred very frequently, but a considerable number of insects was also taken. Like the Herring Gull it destroys the eggs and young of other birds, and is also harmful to fish.

Though less injurious to agriculture than the Herring Gull, both species might well be left unprotected until their numbers have greatly decreased.

The Black-headed Gull is the smallest of the three, and can be recognised by its brown head and red legs and feet. It nests inland all over Aberdeenshire, and its feeding habits have been the subject of much dispute. In the Report for 1910 (7) the summary of twenty records shows that injurious insects were found twelve times and fish only three times. No grain was found at all. Mr Newstead (10), in his report to the Board of Agriculture, emphasised the great destruction of crane-fly by these birds, and Mr D. L. Thorpe and Mr L. E. Hope (12), in their report to the Cumberland County Council, stated earth-worms to be the food most frequently taken, with wire-worms, "leather-jackets," beetles, may-flies, oats, grass, turnip, and other vegetable matter.

During 1911-12 one hundred and thirty-seven birds have been examined, and the summary of results shows insects and earth-worms to be the principal foods. Grain is taken, but only to a small extent.

Owing to the difficulty of distinguishing different species, all gulls are frequently condemned by the farmer as hurtful to his interests, but the Black-headed Gull is undoubtedly beneficial to the agriculturist.

In conclusion, reference must be made to a very interesting paper on "The Economic Aspect of Insects and Birds," by Dr. Alph. Dubois (6).

He begins by dividing birds and insects into species that are useful, injurious, and neutral, the last always predominating. Insectivorous birds ought to be rigorously protected, because they are never sufficient in number to prevent or stop the ravages of certain harmful insects. To account for this several

reasons are given. Too many are captured in southern countries at the time of migration, the attendant dangers of migration, the need of a large area of supply to provide sufficient food in the nesting season, and the natural instinct of the birds to leave the cultivated places and return to the woods for shelter.

Further, the services of the birds are sometimes exaggerated. They do not take insects indiscriminately, and it is to bats, moles, and rooks, and not to the insect-eating birds, that we owe the destruction of certain Lamellicorn beetles. Some insects are protected by their disagreeable odour, while hairy caterpillars are palatable only to the Cuckoo.

The only means to determine exactly the economic value of an animal is to examine the stomach contents. An investigation on certain insectivorous birds was ordered by the Belgian Minister of Agriculture to be made, and briefly the result is—1st, that birds take few useful insects, and 2nd, that they are incapable by themselves of preventing the devastations of phytophagous insects, because they feed especially on larvæ and insects that are classed as neutral.

Dr Dubois says a perfect equilibrium exists in Nature, and, if man had not broken it himself, he would not have to fear the ravages of these insects. Cultivation attracts them and assists multiplication, hence it is indispensable to protect the animals that live at the expense of these destructors.

The agriculturist believes that the bird is the only foe of these pests, but it is amongst insects themselves that their most powerful enemies are to be found. The most important are the ichneumon flies, that deposit their eggs under the skins of larvæ, where the young feed and grow at the expense of the host. How then do larvæ and caterpillars abound in certain years? This is due to a continuous balance that operates between the harmful insects and the parasites that devour them. The latter would destroy all the phytophagous insects, were it not that, failing to find sufficient larvæ in which to deposit their eggs, they perish in their turn. Then the injurious insects are free to multiply, and in time reappear in great abundance, thus again providing many victims for the ichneumon flies, of which they quickly take advantage.

Amongst the Coleoptera the ground beetles of predaceous habits are the most beneficial. Of the Diptera the useful species, like the ichneumon flies, are those whose larvæ live at the expense of injurious larvæ, principally caterpillars. Useful species are also to be found in the Neuroptera and Orthoptera.

It is evident that whole families of insects render us considerable service, but there is no end to the services of the Hymenoptera and Diptera. One can only say, without them the fields would scarcely produce anything.

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DOMESTIC SHEEP AND THEIR WILD ANCESTORS.

II. WILD SHEEP OF THE ARGALI TYPE.

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IN the first part of this article, published in the 'Transactions' for 1913,¹ it was mentioned that at the present day there are four more or less distinct types of wild sheep—viz., the mouflon of Europe and South-western Asia, the urial and argali of Central Asia, and the bighorn of North-eastern Asia and North-western America. After referring to the characteristics and distribution of the varieties of the mouflon and

¹ "Domestic Sheep and their Wild Ancestors. I. Sheep of the Mouflon and Urial Types." 'Transactions,' 1913, p. 160.

urial, an attempt was made to indicate the part these two wild species had played in forming modern breeds. Special attention was directed (1) to the semi-wild sheep on the island of Soay, near St Kilda, some of which resemble the urial, while others appear to be more closely related to the mouflon; (2) to Shetland sheep of the peat or turbary type; (3) to "four-horned" sheep; and (4) to a variety (introduced about 1908 and known as the Siberian mouflon) characterised by long, fine, lustrous wool. This contribution will be devoted to a consideration of the wild sheep of the argali type—i.e., to the varieties of *Ovis ammon*. Though we know nothing about the remote ancestors of sheep, and little about their Quaternary ancestors, we may safely assume that at no time in the history of the world did more magnificent wild sheep exist than are now to be met with in the Pamirs, in the Tian Shan, and the great Altai Mountains of Asia. The huge wild ox (*Bos taurus primigenius*)—from which British breeds of cattle are in great part descended—has been extinct in Europe for some 400 years; but the wild sheep, to which the Norfolk, merino, Highland blackface, and other large-horned breeds are intimately related, not only survives, but is as large and carries as fine horns as any sheep that ever existed.

Specimens of argali (Fig. 1), over 12 hands at the withers, and armed with huge horns, are often enough seen in museums, but never in zoological gardens. Partly because of the great size of the larger varieties, and partly because the small as well as the large varieties are unusually shy and wild, it has often been taken for granted that the argali of Asia, like the American bighorn, have contributed nothing to our modern domestic breeds. It is admitted that the merino and certain other breeds have horns of the argali type, but it is not yet admitted that spiral-horned and certain hornless breeds are intimately related to wild sheep, which sometimes measure 13 hands at the withers.

Though some naturalists may still assume that domestic breeds of sheep are descended from a long-tailed, extinct, and totally unknown ancestor, authorities on domestic animals are now prepared to admit that the improved British breeds, as well as the Soay and other primitive races, are intimately related to the urial and mouflon. Evidence of this we have in a recent work on sheep, in which the author, in concluding the chapter on British breeds, says: "It may be mentioned that there appears nothing in their physical characteristics to preclude all the British long-tailed sheep being descended from the wild mouflon, all the horned breeds having horns of the general type of those of the mouflon. . . . On the other

hand, there may be a more or less considerable intermixture of the blood of the wild Asiatic urial in the domesticated breeds of British sheep."¹ But until three years ago naturalists had not, so far as I am aware, any reliable evidence that either in prehistoric or in historic times any variety of *Ovis ammon* had actually taken part in the making of any breed of sheep now living under domestication. To Mr Douglas Carruthers, the author of a recent work on Mongolia,² we are indebted for information which, besides supporting the view that in olden times the nomads of Central Asia were in the habit of crossing their tame ewes with wild rams, conclusively proves that at the present day the natives of Bokhara use wild rams of one or more varieties of *Ovis ammon* for crossing with their fat-rumped ewes.

Why the natives of Bokhara mate their ewes with wild or half-wild rams is not very evident. Apparently Kirghiz herdsmen fully realise that close in-and-in breeding leads to disastrous results. As likely as not, from time immemorial wild rams "caught in the thicket" have been used in the East to rejuvenate the flocks. It is, however, conceivable that the extremely valuable Kirghiz Kara-Kul ewes, in order to produce lambs bearing the finest Astrakhan fur, require periodically to be crossed by a wild ram.

It may seem a far cry from an *Ovis ammon* hybrid to a Scotch blackface or a Spanish merino, nevertheless there are good reasons for assuming that but for *ammon* hybrids the merino would never have been seen on Spanish plains, or the blackface on Highland hills. In some parts of Shetland during the first four months of 1913, from 30 to 40 per cent of the native (scattald) sheep died. The death rate amongst improved breeds in the same districts was probably under 10 per cent. The death rate was high amongst the native sheep for two reasons: (1) because, owing to the severe winter and spring, food was scarce; and (2) because the indigenous sheep have not the same faculty of storing fat as modern improved breeds.

Like Soay and other primitive breeds, indigenous Shetland sheep rapidly improve on good pasture, but, unlike modern breeds, they seem to be incapable of laying up a store of food to serve as a reserve during times of scarcity. They have not the faculty of storing up fat, because they are mainly descended from the ancient peat or turbary race, formed in Central Asia before the arid conditions which now prevail necessitated in sheep, as in camels, the formation of fatty deposits. Just as there are men with an innate tend-

¹ Lydekker. 'The Sheep and its Cousins,' p. 120. Allen & Co. 1912.

² 'Unknown Mongolia.' Hutchison & Co. 1913.

ency to put on "flesh," just as there were in olden times fat as well as lean kine, there were, doubtless, fat as well as lean sheep,—thrifty sheep that laid by, during times of plenty, every ounce of nourishment that could be spared against times of famine.

By taking advantage of the faculty in certain cattle of storing the excess of nourishment assimilated, stockowners have evolved early maturing, or, to be more accurate, easily fattened strains of cattle. In a like manner, but by natural more than by artificial selection, when the necessity arose, races of sheep were evolved in Central Asia which, by storing nourishment in the rump or tail when food was plentiful, had a better chance of surviving during times of scarcity.

At the present day the Central Asiatic steppes harbour only two races of sheep—viz., the Afghan fat-tailed sheep (Fig. 27) now common in Southern Turkestan, and the fat-rumped or fat-buttocked sheep (Fig. 5) almost universal in Bokhara. In fat-tailed sheep the tail is very broad in some breeds (Fig. 24), very long in others (Fig. 23).

A specimen of a Kirghiz fat-buttocked sheep has recently been added to the British Museum. A ram of this breed is represented in Figs. 4 and 5, after photographs by Mr Douglas Carruthers. Though the drooping ears and large accumulations of fat suggest long domestication, the horns differ but little from those of a wild Altai *ammon* (Fig. 6).

The recent explorations of the American Pumpelly Expedition at Anau, Turkestan, go a long way towards proving that the turbary race, which reached Europe in Neolithic times, was a descendant of the wild urial still inhabiting the Kopet Dag to the north of Persia, and they afford a certain amount of evidence in support of the view that the urial took part in forming the fat-tailed Afghan breed.

While the Kopet Dag variety of the urial was undergoing domestication in Southern Turkestan, other varieties were doubtless being tamed in the north and east. It is probable that early in Neolithic times the Bokhara tribes—if they did not actually anticipate their western neighbours in the taming of wild sheep—acquired sheep by barter or otherwise, and almost from the outset increased their herds with the help of the wild varieties of *Ovis ammon* which to-day provide stud rams.

Towards the close of the New Stone Age, the domestic sheep of Southern Turkestan, though still of the urial or turbary type, had decidedly smaller limb-bones, and decidedly shorter horn-cores, than their wild ancestor. Some centuries later (as the material collected by the Pumpelly Expedition abundantly proves) a new race of sheep made its appearance at Anau in

Turkestan—a race characterised by, amongst other things, the absence of horns in the ewes. The horns were probably absent in some rams, but were rudimentary in others. As this hornless race appeared in Southern Turkestan about the same time as the camel, the probability is that it was introduced, along with the camel, from some other part of Central Asia.

In its skull this new sheep, on the whole, agrees more with modern fat-tailed than with turbary sheep. In the only skeleton of the Afghan fat-tailed sheep (Fig. 27) I have had the opportunity of examining, the limb-bones are of the urial type, but the skull (Fig. 21), in the face-pit and other respects, agrees with the argali. It is hence extremely probable that the hornless race, which appeared at Anau with the camel about the end of the Neolithic Age, was a hybrid between a tame variety of the urial (*Ovis vignei*) and a small variety of the argali (*Ovis ammon*).

As breeders know, the crossing of two varieties or strains sometimes leads to "an epidemic of variation." By crossing tame and wild rabbits I once obtained a litter including three absolutely tailless individuals, and four of the members of another cross-bred litter were given to spinning, like Japanese waltzing mice.

By crossing a pure-breeding Inverness strain of West Highland terriers with the original Poltalloch strain, five more or less distinct types turned up; and equally striking results were obtained by crossing a West Highland terrier with an ancient Mexican (Chihuahua) breed. When animals and plants are crossed the stability is liable to be upset, with the result that variation takes place in new directions as well as in old. If, as is highly probable, a domesticated variety of the urial was crossed with a wild (or tame) variety of the argali, we can more easily account for the appearance about the end of the New Stone Age of tall hornless sheep, of fat-rumped and fat-tailed sheep eminently adapted for the arid conditions which in course of time characterised large areas in Central Asia, and, later still, of sheep in which the under-coat consisted of long, fine wool.

For centuries after the Ice Age the greater part of Central Asia was well watered and fertile, but when eventually the mountains of ice in the north and west disappeared, numerous rivers dried up, with the result that the inland seas and lakes became more and more brackish, and eventually also dried up, leaving large shallow basins often covered with a thick layer of salt-encrusted sand.

As the aridity increased the wild sheep in some parts either died out or migrated to areas where at least a limited amount of food could be obtained during the dry season. But the

DESCRIPTION OF PLATES.

PLATE I.

1. The Altai ammon (*Ovis ammon typica*), found along the whole length of the Great or Mongolian Altai. An Altai ammon obtained by Mr Miller stood 53 in. at the shoulder, and had horns 61·5 in. in length along the curve, 20·5 in. round the base, and 37·5 in. from tip to tip. Horns and skull of the Altai variety may weigh 45 lb. From a drawing by Mr G. Taylor.
2. Head of a Scotch Blackface with the horns "nipped-in." In the Scotch Blackface the horns sometimes measure 47 in.
3. Head of a Scotch Blackface in which the "nipping-in" of the horns is not much greater than in the Altai ammon represented in fig. 1. Photo by Brown & Co., Lanark.

PLATE II.

- 4 and 5. A Kirghiz fat-buttocked ram, with drooping ears, and horns relatively as large as in the Altai ammon represented in Fig. 6. In this ram, which measured about 30 in. at the shoulder, the fat accumulated in the buttocks weighed 18 lb. In some Border-Leicester and Cotswold rams there is a considerable amount of fat at the root of the tail or in the buttocks. From photographs by Mr Douglas Carruthers.
6. Horns of an Altai ammon. Though less "nipped-in" than in some Altai races, they are less open, and have a greater circumference at the base, than in any of the Pamir races of *O. a. poli*. After a figure in Lydekker's 'Wild Oxen, Sheep, and Goats.'

PLATE III.

7. Head of a Soay ram with the tips of the horns everted, as in the Karatau ammon (*O. a. nigrimontana*) of Bokhara. From a specimen in the University College Museum, Bangor, N. Wales.
- 7A. Head of a cross-bred Shetland ram with horns of the *nigrimontana* type.
8. Skull from a Bronze Age deposit in the Thames Valley, with horn-cores of the *nigrimontana* type. From a specimen in Dr Frank Corner's collection.
9. Skull and horns of *O. a. nigrimontana*, from a specimen about 32 in. at the shoulder, obtained by Mr Douglas Carruthers about 100 miles from Samarcand. The wild sheep of the Karatau Mountains seems to be intermediate between the urial of Turkestan and the Tian Shan ammon. After figure in the 'Field,' Oct. 2, 1909.

PLATE IV.

10. Head and horns of the Pamir wild sheep (*O. a. poli*). In Marco Polo's sheep the horns, though only 16 or 17 in. in circumference at the base, may measure 75 in. from tip to tip, and 56 in. along the curve. The ewes of all the ammon varieties carry horns, but in the *poli* ewes the horns are longer, more upright, and have a sharper edge in front than in the other varieties.
11. Head and horns of a merino ram. Though the merino is said to be "originally a native of Spain," it is probably, as the horns suggest, related to ancestors of the *poli* type. The wool of the merino resembles the undercoat of the Afghan fat-tail (fig. 27). How the unimproved ancestors of the modern merino reached Europe has not been ascertained.
12. Head and skull of a Norfolk blackface—an old, large, active breed with horns intermediate between those of the Altai and Pamir varieties. From specimen in British Museum.

PLATE V.

13. Horns of a XIIth dynasty fat-tailed Egyptian ram, with a more open spiral than in *O. a. poli*. The interval from tip to tip is 25.5 in. After figure by Loutet and Gaillard of a mummified specimen found at Sakkarā, Egypt.
14. Skull and horns of a Welsh mountain ram. The horns are "nipped-in" as in many Scotch blackface rams. From a specimen in University College Museum, Bangor.
15. Skull and horns of a Dorset ram. The horns form two complete circles, and are depressed and "nipped-in" as in some Scotch blackface strains. Hybrids between the Altai and Pamir varieties might have horns of this type. After Millais, 'Mam. of Great Britain and Ireland.'

PLATE VI.

16. Front cannon-bone (iii. and iv. metacarpals) of a sheep over 30 in. at the shoulder, which probably reached England about the beginning of the Bronze Age, total length 160 mm. (Nat. size.) From the Lea Alluvium Abbey Mills. Dr Frank Corner's collection.
17. Front cannon-bone of a turbary, peat, or heath sheep about 22 in. at the shoulder. Sheep with cannon-bones of this type have been in Europe since the coming of the Neoliths to the present day. Nearly pure specimens of peat sheep still occur in Soay near St Kilda, and in Shetland. From Lea Alluvium, Walthamstow. Dr Frank Corner's collection.
18. Front cannon-bone of a Scotch blackface ewe which died during the winter 1912-13 in Shetland. This cannon-bone has the same width as that of a Pentland's (Mid-Lothian) ewe, but is 15 mm. shorter. The shortness is probably due to dwarfing induced by the unfavourable surroundings under which the ewe was bred and reared.
19. Lower end of cannon-bone of a Border-Leicester tup, total length 146 mm., width 22 mm.—the width indicates descent from wild race, 38 in. at the shoulder. From specimen received from Mr W. Barber, Board of Agriculture for Scotland.

PLATE VII.

20. Skull of a wild Sardinian mouflon ewe (*O. musimon*). Note absence of horn-cores, nearly straight profile, and that the premaxilla (*p*) projects upwards between the maxilla (*m*) and nasal. The face is bent downwards on the cranium to form an angle of 19°.
21. Skull of Afghan fat-tail ewe (a ram of this strain is represented in fig. 27). Note absence of horn-cores, convex profile, short premaxilla (*p*), and great depth of maxilla (*m*). Owing to the great deflection the face forms an angle of 28° with the cranium. As in some of the *ammons* the face pit is very shallow. From a specimen presented by the Marquis of Bute.
22. Head of a Border-Leicester ram. The convex profile of the Border-Leicester, Afghan fat-tail, and certain other "Roman-nosed" breeds suggests a more intimate kinship with Marco Polo's than with any other race of wild sheep. From photograph by G. A. Ewart.

PLATE VIII.

23. Drawing of a Palestine ram with a very long (but not very broad) fat tail supported on a truck. The horns are of the *poli* type. From the Jewish Encyclopædia.
24. The long, broad, fat tail of an Afghan ram imported by the Marquis of Bute. The fat extends about 10 in. below the tip of the tail—the skin below the turned-up end of the tail, like the inner surface of the tail, is quite bare. From photograph by G. A. Ewart.
25. Tail of a long-legged, lop-eared, hornless Egyptian breed, with a long tail, containing little or no fat. After photograph by Captain Stanley Flower.
26. Tail of a large English (Penistone, Yorkshire) ram, with large "nipped-in" horns and a long tail containing little fat. After a drawing in the Low Collection, University of Edinburgh.
27. Afghan fat-tailed ram, showing side view of tail in fig. 24. Note the drooping ears and thick outer coat of coarse wool. There are only vestiges of horns. From photograph by G. A. Ewart.



Fig. 1.—Ovis ammon typical of the Great Altai Mountains.



Fig. 3.—Blackface with normal horns



Fig. 2.—Scotch Blackface with "nipped-in" horns.

PLATE II.



Fig. 6.—Skull and horns of Altai Ananou.



Fig. 5.—The same Ram seen from behind.



Fig. 4.—A Kirghiz fat-bodied Ram.

PLATE III.



Fig. 7. *Head of Soay Ram of the nigrimontana type.*



Fig. 7A —*Head of cross-bred Shetland Ram of nigrimontana type.*



Fig. 8.—*Skull and horn-cores of Bronze Age Sheep.*

Fig. 9.—*Skull and horns of O. a. nigrimontana.*

PLATE IV.



Fig. 10.—*Head and horns of Pamir Annon (O. a. poli).*



Fig. 11.—*Head and horns of a Merino Ram.*



Fig. 12.—*Head and horns of a Norfolk Blackface Ram.*

PLATE V.



Fig. 13.—*Occiput and horns of Egyptian fat-tailed mummified Sheep.*
Time of the Pharaohs.

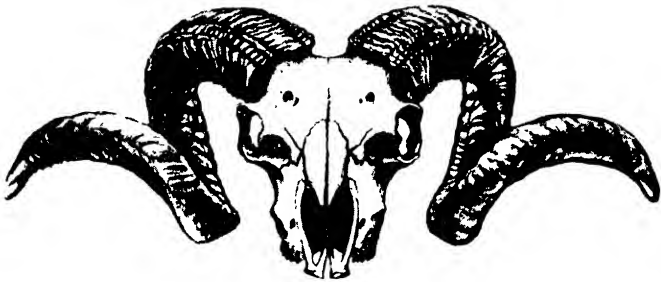


Fig. 14.—*Skull and horns of a Welsh Mountain Ram.*
The horns are 'nipped-in' as in Altai ammon (fig. 1).



Fig. 15.—*Skull and horns of Dorset Ram.*

A cross between an Altai ammon (fig. 1) and a Pamir ammon (fig. 10) would probably have horns of this type.

PLATE VI.

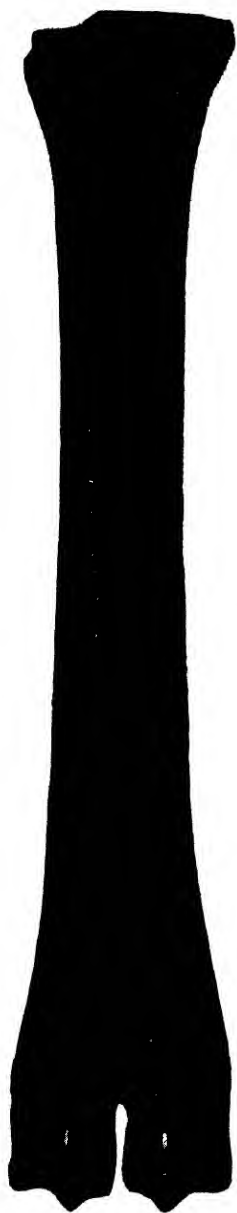


Fig. 16.

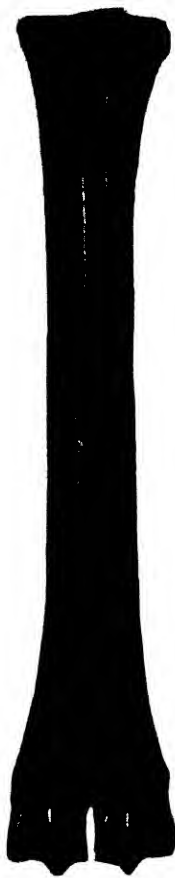


Fig. 17.

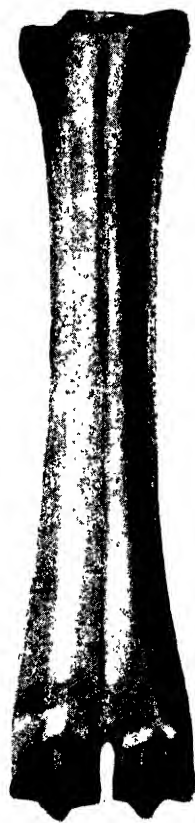


Fig. 18.



Fig. 19.

Fig. 16.—Cannon-bone of 32-in. Bronze Age Sheep. Fig. 17.—Do. of 22-in. Turbury (Neolithic?) Sheep. Fig. 18.—Do. of dwarfed Blackface Sheep. Fig. 19.—Lower end of cannon-bone of 33-in. Border-Leicester Ram. (All nat. size.)

PLATE VII.

Fig. 20.

Fig. 21.

Fig. 22.



Fig. 20.—*Skull of Sardinian Mouflon Ewe.* Fig. 21.—*Skull Fat-tail Ewe.*
Fig. 22.—*Head Border-Leicester Ram.*

PLATE VIII.

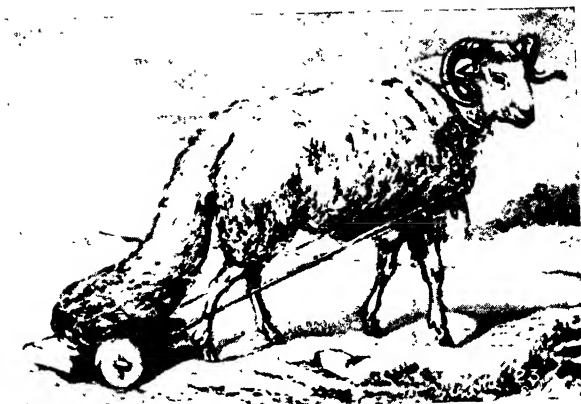


Fig. 23.—*Fat tail with truck.* Figs. 24 and 27.—*Afghan Fat-tail Ram.*
Fig. 25.—*Long-tailed Egyptian Ram.* Fig. 26.—*Long-tailed English Ram.*

domestic herds, being unable to migrate in search of food, suffered more and more as the aridity increased. In Shetland, according to local traditions, there may be an interval of seven or more years between two severe winters; but annually, for thousands of years, there has been a trying dry season in Central Asia, with the result that, as a rule, only the domestic sheep with a store of fat in the rump or tail had a chance of surviving.

As the fertile areas in Turkestan gradually dwindled, the inhabitants, forced to find fresh fields and pastures new, migrated in various directions, taking their goods and chattels with them. In certain parts of India, Persia, Asia Minor, Syria, and Palestine, as well as in Egypt and other parts of Africa, the conditions proved almost as suitable for fat-tailed and fat-rumped sheep as the dry plateaux of Central Asia.

But while fat-tailed and fat-rumped sheep found congenial surroundings in South-western Asia and in many parts of Africa, they met with very different conditions in Europe. Partly because of the different environment—the absence amongst other things of saline pastures—partly as the result of crossing with the previously introduced short-tailed, small turbary sheep, and partly by artificial selection, the fat-tailed and fat-rumped, horned and hornless Asiatic breeds, which reached Europe some 6000 years ago, were gradually modified to such an extent that it is difficult to realise that modern improved European breeds are descended from the same ancient stocks as the modern fat-rumped and fat-tailed breeds of Asia and Africa.

It will doubtless be asked what evidence is there that the merino, Highland blackface, and other spiral-horned breeds, the Cheviot, Southdown, and other hornless breeds, are related through fat-tailed or fat-rumped varieties to the wild urial and wild argali of Asia? There is no evidence that true wild sheep ever existed in Africa, or that the bighorn of America was ever domesticated, or that domesticated breeds with large spiral horns have been derived, as Lydekker assumes, from either the European or the Asiatic mouflon.

On the other hand, just as hybrids have been bred for centuries in Corsica between the wild mouflon and tame sheep, and as hybrids between the urial and tame sheep are met with to-day in the Punjab, hybrids between the argali and tame sheep are met with in Central Asia. To Mr Douglas Carruthers (who, as already mentioned, came across, in Bokhara, hybrids between wild varieties of *Ovis ammon* and fat-rumped ewes) I am indebted for the following facts about the breeding of sheep in Bokhara and Russian Turkestan. Though perhaps the nomadic Kirghiz were the first to cross

tame ewes with wild rams, Mr Carruthers found the *ammon* hybrids in the possession of the Sarts or Chantos, people who live in the towns of eastern Bokhara, close to the mountains frequented by herds of Marco Polo's sheep, and in Ferghana which adjoins the Pamirs on the south, and is near the Aksai sheep country of the Tian Shan Mountains on the east. The hybrids seen in Bokhara were obviously obtained from a Pamir race of *O. a. poli*; but while the hybrids in the south of Ferghana were doubtless by *poli* rams, those in the north-east were in all probability by rams of Littledale's variety of the argali (*O. a. littledalei*). If in Bokhara and Turkestan, and perhaps other parts of Central Asia, tame ewes have from time immemorial been crossed with rams armed with large spiral horns, we can account for the large horns of ancient Egyptian sheep, as well as of modern improved breeds.

The difficulty of accounting for large horns having been overcome, we shall doubtless ere long be able to account for the presence of the long tail of modern breeds.

When crosses between fat-tailed or fat-rumped varieties and short-tailed turbary or peat sheep are interbred, some of the offspring might easily pass for crosses obtained by mixing the blood of three or more modern breeds. In first crosses between a fat-tailed breed and a tailless fat-rumped breed, as in first crosses between fat-tailed and short-tailed breeds, the tail as a rule reaches at least to the hocks. Moreover, in lambs of improved modern breeds, the tip of the long tail is sometimes turned upwards, as in Afghan fat-tailed rams, or the tail is as short as in wild sheep. I have a blackfaced ewe, bred in Perthshire, with a tail as short as in the argali of Bokhara; and some years ago over 80 per cent of the pure-bred offspring of one of the best rams in a large Highland blackface flock had, when full grown, the tail as short as in the wild urial. Again, in many lambs fat tends to accumulate in the root of the tail, while in not a few breeds, when food is abundant, fat accumulates to the extent of several inches over the rump. In this tendency to store fat, improved breeds, on the one hand, differ from the Soay, Shetland, and other sheep of the turbary type, and, on the other, approach the fat-tailed and fat-rumped breeds of Central Asia.

By interbreeding crosses recently obtained between short-tailed ewes and a fat-tailed ram (Fig. 27), imported two years ago by the Marquis of Bute, convincing evidence will almost certainly be obtained in support of the view that lambs of Cheviots and other breeds are born with a long, useless caudal appendage, because they include a fat-tailed race amongst their ancestors.

Just as the explorations of the American Pumpelly Ex-

pedition proved that, up to a certain period, only sheep of the urial (turbary) type occurred in Turkestan, the investigations of British naturalists have proved that up to a certain period only small, slender-limbed sheep of the turbary type occurred in England. For example, in certain alluvial deposits in the Thames Valley, up to about 13 feet from the present surface, all the sheep remains belong to the turbary race, but above this level the remains of a decidedly large race begin to make their appearance. The difference between the metacarpals of the small, ancient turbary race of the pile-dwellers and the more recent Bronze Age race is shown in Figs. 16 and 17.

The metacarpal from the Lea alluvium, represented in Fig. 16, belonged to a sheep as large as the wild *ammon* of Bokhara—i.e., to a sheep measuring over 30 inches at the shoulder.¹ In sheep living under natural conditions there is a remarkable agreement in the cannon-bones. As the table on p. 92 shows, the cannon-bones of the wild argali and the wild mouflon, of the prehistoric turbary sheep, and of the semi-wild turbary sheep still found in Soay and Shetland, have all nearly the same proportions,—in each the total length is practically nine times the width at the middle of the shaft. On the other hand, some of the cannon-bones from the alluvial deposits of the Thames Valley are under nine—i.e., some of the sheep in the Thames Valley during the Bronze Age were, owing to dwarfing, relatively bigger boned than any of the varieties of the wild argali of Central Asia hitherto examined.

From studying the skeletons of Shetland ponies, I ascertained that even abnormally short cannon-bones retain their normal width—i.e., dwarfing in ponies implies a reduction in the length, but not a reduction in the width, of the cannon-bones.

The cannon-bones of sheep behave in exactly the same way as the cannon-bones of ponies. In a ewe from the small island of Soay, and in a mouflon bred and reared in a zoological garden, the front cannon-bones are finer than in the wild mouflon—e.g., in the Soay ewe the length is 9·37, in the garden-bred mouflon 10·7, but in a wild Sardinian mouflon the length is only, as in the wild argali, nine times the width. In short-legged Highland blackfaced sheep, as in Shetland ponies, the cannon-bones, though reduced in length, are not reduced in width—a metacarpal of a Highland blackface ewe from Shetland (Fig. 18), though only 103 mm. long, is 15 mm. wide—

¹ According to Duerst, the large cannon-bones from the Thames alluvium belonged to a hybrid between the mouflon and a domestic breed. But as hybrids between a mouflon and recent peat or turbary sheep (as large as the turbary sheep at the end of the Stone Age) have as small cannon-bones as the one represented in Fig. 17, the large cannon-bones from the Thames alluvium are more likely to belong to an argali than to a mouflon hybrid.

SHEEP.	Where found.	Metacarpals.			REMARKS.
		Length.	Width.	Index.	
Mouflon (<i>Ovis musimon</i>) . . .	Sardinia . . .	mm. 144	mm. 16	9.0	In wild sheep height at shoulder is five times length of front cannon-bone on an average, therefore this mouflon would be 28 in.
Urial (<i>O. vignei</i>) . . .	Punjab . . .	171	19	9.0	Height at shoulder about 33.5 in.
Argali (<i>O. ammon</i>) . . .	Altai? . . .	240	26.2	9.1	Height at shoulder about 47.5 in.
Turbary (dom. urial?) . . .	Thames alluvium . . .	109.5	12	9.1	Average height at shoulder 21.5 in. Though nearly 12 in. smaller than their reputed urial ancestors, the index is practically the same as in the urial. The height at the shoulder and the size of the cannon-bones has remained unaltered for about 6000 years.
" " " " . . .	" " " " . . .	110	12	9.1	
" " " " . . .	" " " " . . .	112.5	12.5	9.0	
Soay (urial-mouflon?) . . .	Soay, St Kilda . . .	109	12	9.0	
Shetland (turbary type) . . .	Foula . . .	111	12	9.2	These bones from the Windhouse Broch, Mid-Yell, are very slender—perhaps the result of in-and-in breeding.
" " " " . . .	Mid-Yell Broch . . .	106	10	10.6	
" " " " . . .	" " " " . . .	114	11	10.3	
Fat-tail (urial-ammon?) . . .	Afghanistan . . .	116	14	8.2	The cannon-bones, though relatively short, belonged to the urial or turbary type.
Bronze Age (urial-ammon?) . . .	Thames alluvium . . .	160	19	8.4	The 160 mm. cannon-bone belonged to a sheep over 30 in. at the shoulder. Skulls from the same deposits agree with skulls of wild sheep of the Karatau Mts.
" " " " . . .	" " " " . . .	143	17.5	8.4	
Roman period . . .	Silchester . . .	111.2	13.2	8.3	The sheep bones from this Roman station near Reading all seem to belong to dwarfed cross-bred individuals.
Highland Blackface ♀ . . .	Pentlands . . .	118	15	7.8	This 118 mm. cannon-bone belonged to a ewe just over 23 in. at the shoulder; the 103 mm. one to a dwarfed three-year-old Highland blackface ewe bred in Shetland. Though shorter, the cannon-bone is as wide in the Shetland as in the Fentlands ewe.
" " " " . . .	Shetland . . .	103	15	6.8	
Border-Leicester ♂ . . .	Dumfries . . .	146	22	6.6	This cannon-bone suggests that Border-Leicesters are descended from wild ancestors measuring about 38 in. at the shoulder.

i.e., the length is 6·8 times instead of 9·2 times the width, as in a Shetland ewe of the peat or turbarry type (Fig. 17).¹

The cannon-bone (Fig. 16) from the Lea alluvium measures 160 mm. (6·3 inches) by 19 mm. (·75 inches), hence the length is 8·42 times the width—*i.e.*, the cannon-bone has lost 11 mm. by dwarfing.

In some modern breeds, with cannon-bones of the Bronze Age type, the lower end (Fig. 19) is as broad as in a 40-inch wild *Ovis ammon*. This seems to imply that breeds descended from one of the large varieties of *Ovis ammon* were introduced into England during the historic period.

In sheep, as in horses, there is an intimate relation between the length of the cannon-bone and the height at the withers. From a table of measurements I find that a sheep with cannon-bones 160 mm. in length is, as a rule, 31 inches at the withers. But if allowance is made for dwarfing, it follows that during the Bronze Age there were sheep in the valley of the Thames measuring from 32 to 33 inches at the withers. The domesticated descendants of the urial, living in Britain before the arrival of the tall (32-inch) race, probably never exceeded 24 inches at the withers. Hence the height of the sheep which reached England during the Bronze Age affords very strong evidence in support of the view that they had, at least in part, descended from one of the smaller varieties of the argali (*O. ammon*) of Central Asia.² If all the large, improved, hornless breeds, as well as the merino, Highland blackface, and other breeds with spiral horns, are more or less intimately related to *Ovis ammon*, a short account of the argali of Central Asia may prove suggestive to flockmasters and others interested in the history of domestic breeds.

The argali are chiefly found amongst the mountains around the Gobi Desert. There are, however, three small varieties far from the Gobi—viz., a western one, amongst the Karatau (Black Mountains) of Bokhara; a north-eastern, in Kamskatka; and a north-western, to the north of Lake Balkash. The largest variety (*Ovis ammon typica*) ranges along the whole length

¹ In sheep, as in horses, inbreeding may lead to loss of bone, but however plentiful the food and favourable the climate, the "bone" in domestic animals never seems to exceed that of their wild relatives. When cannon-bones are relatively wider than in wild races, they are abnormally short, hence the apparent increase in "bone" is due to dwarfing—to a reduction in the length without a corresponding reduction in the width.

² The 32-inch race of sheep represented by cannon and other bones in the alluvial deposits of the Thames Valley probably reached Europe by way of North Africa. This view is supported by the fact that a long-legged breed occurred in Egypt at the end of the Stone Age. This breed (the males of which had a throat ruff and nearly horizontal horns as in a modern-maned Abyssinian breed) was in the time of the Pharaohs displaced by a fat-tailed race with horns (Fig. 13) of the *poli* type.

of the Great Altai Mountains. In the Tian-Shan Mountains (separated from the Altai by a desert 100 miles wide) there are three varieties, and the Saiar Mountains to the east of Lake Balkash hold yet another variety. In addition, there is the magnificent long-horned Pamir variety, named after Marco Polo (*Ovis ammon poli*), and the Tibet variety (*O. ammon hodgsoni*) with short but extremely massive horns. For the distribution of the more important varieties of *Ovis ammon* consult a map of Central Asia. Of all the existing argali, the small race (*O. a. nigrimontana*) found on the Black Mountains of Bokhara is perhaps the oldest; moreover, this small race seems to bear very much the same relation to the urial of Western Turkestan that the urial of Southern Turkestan bears to the Persian mouflon to the south of the Elburz Mountains.

We can account for the numerous varieties of argali by assuming that, as the climate changed, and as the land was elevated and depressed during the Ice Age, herds of *ammon* migrated in various directions—from Bokhara or whatever area happened to be the cradle of the race—and having been isolated by deserts and other barriers, eventually gave rise to a number of more or less distinct races and varieties. Some of the barriers still persist—e.g., the desert between the Altai and the Tian Shan Mountains, though only 100 miles wide, is a more effective barrier between *O. a. typica* and the three Tian Shan varieties than the most perfect deer fence. But even when several varieties overlap, as is the case in the Tian Shan range—especially in the vicinity of Yulduz—each seems to retain its identity. Centuries of isolation have effectually fixed the respective types.

That the small Bokhara variety found in the Black Mountains to the north of Samarcand is an ancient unspecialised type, allied to the urials of Western Turkestan, is also suggested by the examination of a collection of *ammon* horns. In the small Kamskatka argali, the horns, as in the blackface (Fig. 2), are “nipped-in”; in the variety to the east of Lake Balkash (*O. a. saiarensis*) the horns are decidedly massive; but in the Bokhara variety (*O. a. nigrimontana*) the horns (Fig. 9) are neither “nipped-in” nor yet like the horns of the urial.

By increasing in length, the horns of *nigrimontana* might very well have given rise to horns of the Pamir type (*O. a. poli*) (Fig. 10), and by increasing in girth and thickness, to horns of the Tibet type (*O. a. hodgsoni*).

It may be mentioned that the horns of several varieties of argali are fairly accurately represented amongst domestic breeds. In Shetland, cross-bred rams (Fig. 7) are sometimes seen with horns of the Bokhara type; the horns of merino (Fig. 11) and Norfolk (Fig. 12) rams resemble the horns of a

Mongolian race (Fig. 6); while those of the Exmoor, Welsh mountain (Fig. 14), and Scotch blackface (Fig. 2) are often "nipped-in," as in the Altai race of *O. a. typica* (Fig. 1). More remarkable still, the rams of an ancient Egyptian fat-tailed breed had horns (Fig. 13) of the Pamir (*O. a. poli*) type.

Though some domestic breeds agree closely in their horns with certain wild varieties of *Ovis ammon*, it does not follow that domestic breeds with an open spiral are descended from the *O. a. poli*, or that breeds with "nipped-in" horns are descended from *O. a. typica*. That some members of the Highland blackfaced breed are descended from an ancestor in which the horns formed an open spiral is suggested by the form of the horns of a hybrid between a Southdown ram and a Highland blackface ewe—the horns of this hybrid, instead of being "nipped-in," bend round, as in merinos, well clear of the face. In all probability in the ancestors of the fat-tailed Egyptian sheep with wide-spreading horns (Fig. 13), as in the ancestors of blackfaced sheep with "nipped-in" horns, there were the same potentialities; by artificial selection it might have been possible to form a strain of Egyptian fat-tailed sheep with "nipped-in" horns, as well as a strain with wide-spreading horns, and breeders of Scotch blackfaces could doubtless still, if so minded, make a blackfaced strain with wide-spreading horns of the *poli* type.

THE KARATAU (NIGRIMONTANA) AMMON.

The argali of Western Bokhara, if not a link between the argali and the urial, is certainly the least specialised of all the *ammon* varieties. Partly for this reason, and partly because of its possible intimate relationship with the large Bronze Age sheep of the Thames alluvium, *O. a. nigrimontana* may be first referred to.¹ To begin with, the wild sheep of the Karatau Mountains is very small; instead of measuring 50 or more inches at the shoulder like the Altai *ammon*, it only measures from 30 to 32 inches. Further, instead of frequenting very high mountains, like the Pamir *ammon*, it frequents desert ranges only about 5000 feet above the sea-level,—ranges which lie to the north of Syr Daria and between that river and the Oxus. The nearest neighbours are a urial some hundred miles to the west, a small *ammon* (perhaps *karelini*) near the Issik Kul Lake, several hundred miles to the north-east, and Marco Polo's sheep in the Pamirs to the east. The specimen to which the skull represented in Fig. 9 belonged was obtained by Mr Carruthers about 100 miles from

¹ An account of *O. a. nigrimontana* by Mr Douglas Carruthers will be found in the 'Field,' October 2, 1909.

Samarcand. By comparing the horns of *nigrimontana* with the horns of a urial, one observes that, while in the urial the horns form a simple curve, in the Karatau *ammon* they bend outwards at their tips, with the result that the interval from tip to tip is about 25 inches in the *ammon* but only 15 or 16 inches in the urial. Further, while in the urial the horns end in thin sharp points, in this *ammon* the points are thick and blunt. In colour the Karatau variety generally agrees with the urial. In the accounts published no mention is made of a throat ruff in the Karatau variety, but it is said to have a light-coloured mane some 4 inches in length. There is no evidence that the *nigrimontana* is now used for crossing with domestic sheep, nevertheless it may have contributed in prehistoric times to the making of the Bronze Age race represented by skulls and cannon-bones in the alluvial deposits of the Thames Valley. Both in Shetland and in the Hebrides somewhat tall sheep are still occasionally met with carrying horns of the Karatau type. The head of a Shetland ram with the tips of the horns everted is represented in Fig. 7a, and the head of a Soay ram with everted horns in Fig. 7. The head of a Hebridean ram with similar horns is figured by Millais in his work on British Mammals.

THE ALTAI AMMON.

A general impression of the argali group will be best gained by referring to the Altai variety *O. a. typica* (Fig. 1). As it happens, valuable information about the big sheep of the Altai is contained in a chapter on sport by Mr J. H. Miller in Mr Douglas Carruthers' 'Unknown Mongolia.'¹ One gleans from Mr Miller's account that during the autumn, except when feeding in the morning and afternoon, the rams—which form herds by themselves—make for the uplands, and usually settle down near the crest of a round-topped hill from 6000 to 10,000 feet above the sea-level. They generally choose a spot where (in addition to being inconspicuous and obtaining an uninterrupted view of the country) the wind, curling over the top of the hill, brings timely information of the presence of wolves and other unseen enemies. If, during the siesta, the wind suddenly changes, seized with panic, the rams sometimes rush madly downhill and show signs of unusual excitement, until satisfied that there is no longer cause for alarm. When the ground is rough they may, like the Sardinian mouflon, select a spot near the head of a valley to which the wind converges from all directions. The time of danger is when going to and

¹ "Sport in the Highlands of Mongolia." 'Unknown Mongolia,' p. 248.

from their feeding-grounds, or when lying stretched in the sun during the intervals of grazing.

The young lambs run many risks, and the old ewes are liable to be cut off at any time, but winter is the trying period for the rams. Sometimes on the plateau of Mongolia travellers come across numerous derelict horns. Mr Miller relates that, in one small valley below a cliff, he counted fifty skulls in about half a mile; and Colonel Younghusband states that everywhere on the Pamirs fine horns of the magnificent *Ovis poli* are seen lying about the valleys and hillsides,—at one spot he counted seventy horns within a quarter of a mile.¹

Miller accounts for numerous horns being found in one place by saying that a herd when attacked by wolves in winter, in its mad rush for safety, gets caught in a drift—the females and young rams, unencumbered with 40 lb. weight of horn, make good their escape, while the old rams get stuck fast and are killed.²

Those familiar only with domestic sheep are surprised to learn that wild sheep often appeal more than any other big game to the heart of the hunter, but the surprise vanishes when it is realised that an old Altai wild ram sometimes stands 13 hands at the withers, carries horns weighing over 40 lb., and is as wary as he is active and elusive. Of the wonderful vitality of wild sheep, the following episode affords evidence. On one occasion Mr Miller came across a herd of rams which seemed in no hurry to move. "Every now and then one would get up, nibble at a tuft of grass, and then, after pawing the ground, lie down again. Some were lying with their necks stretched out along the ground, as if resting themselves from the terrible weight nature has imposed upon them. Others were sitting up and chewing the cud, keenly on the outlook." The biggest of these rams, in spite of a terrible wound from a .318 bullet, and of enormous loss of blood, galloped about four miles before he was secured. This ram, some fifteen years old, stood 53 inches at the shoulder, and had horns which weighed over 40 lb., measured 61½ inches round the curve, 21½ round the base, and 37½ inches from tip to tip.

The Altai argali in colour resembles the urial, but it wants the throat ruff usually well developed in the urial in winter, as in most of the large varieties of *Ovis ammon*. In autumn the nose, belly, and lower parts of the legs are white, and there are white rump patches; the forehead and cheeks are grey-brown; and the neck and upper part of body dark chocolate, sprinkled, especially on the shoulder, with white hairs. In winter the outer coat consists of hair from one to two inches in length,

¹ 'The Heart of a Continent,' p. 298. 1896.

² 'Unknown Mongolia,' p. 343. 1913.

while the under coat consists of very short, extremely fine, white wool. The ears are small and the tail shorter than in the urial (Fig. 1). There is no evidence that any of the races of *O. a. typica* have ever been domesticated or used for crossing with the fat-rumped sheep of Mongolia.

MARCO POLO'S AMMON.

When one sees, side by side in a museum, a tall Marco Polo's sheep and a Highland blackface, it seems inconceivable that the one is genetically related to the other, or that the big sheep of the "Roof of the World" took part in forming either modern or ancient domestic breeds. But for the evidence obtained on the spot by Mr Carruthers, naturalists might very well have continued to adopt Lydekker's view that Continental as well as British sheep were probably descended from the mouflon, with perhaps some admixture of urial blood, as suggested by Dr Duerst.¹ Though Mr Lydekker says all the long-tailed, horned, British breeds have "horns of the general type of those of the mouflon," there is no evidence that sheep with horns of the merino or Highland blackface type have ever been derived from either the mouflon or the urial, and it has been found impossible to obtain hybrids with spiral horns by crossing hornless, fat-rumped ewes with either mouflon or urial rams. When the horns of the merino (Fig. 11) or Norfolk (Fig. 12) rams are compared with the horns of the Tian Shan and Pamir *ammons*, it seems to me there is no escape from the conclusion that at least some modern domestic sheep have inherited their horns from ancestors of the *poli* type. Further, when we turn from modern to ancient breeds, *e.g.*, to a XIIth dynasty Egyptian fat-tailed breed (Fig. 13), we are led to conclude that in olden, as in recent times, there were breeds with horns of the *poli* type. In Marco Polo's sheep the horns (Fig. 10) may measure 75 inches along the curve, and the interval from tip to tip is sometimes 56 inches; but though of great length, the horns are so slender that the maximum girth is only 17 inches—*i.e.*, $4\frac{1}{2}$ inches less than in a large Altai *ammon*. In build the *poli* variety is distinctly lighter than the Altai variety, and it also differs from the "Father of all Sheep" in having a longer coat, and a larger amount of white on the hind quarters, and in frequenting higher ground—it has sometimes been met with 18,000 feet above the sea-level. The horns of the old ram (Fig. 4), though differing decidedly from urial and mouflon horns and from the horns of urial and mouflon hybrids, fairly accurately reproduce a phase through which

¹ 'The Sheep and its Cousins,' pp. 120 and 143.

poli horns pass during their growth. It will be observed that while the horns in Fig. 4 differ but little from those of the merino represented in Fig. 11, they differ considerably from the "nipped-in" horns of the Highland blackface in Fig. 2. When the horns of a Highland blackface or of a Dorset ram (Fig. 15) have three, nearly complete, close circles they may be regarded as more specialised than 75-inch *poli* horns. For some years very few fine heads of Marco Polo's sheep have been obtained in the Pamirs. If the rams with the finest heads are systematically killed by sportsmen, the time may come when only small races will be left, even in the most inaccessible parts of the "Roof of the World."

THE TIAN SHAN AMMONS.

With the Tian Shan we associate Karelin's and Littledale's sheep. The former (*O. a. karelini*) is met with between Yulduz and the north of Issik Kul, the latter (*O. a. littledalei*) from Yulduz to the western end of Tian Shan. Littledale's sheep resembles *poli*, but the horns are shorter and thicker; Karelin's is nearly intermediate between *poli* and *O. a. typica* of the Altai. A head of *karelini* was picked up in Yulduz in 1911 with horns nearly as large as in the record *poli*—length $70\frac{3}{4}$, girth $16\frac{1}{2}$, and spread $46\frac{1}{2}$ inches. The natives of Ferghana, as already mentioned, cross their ewes with the race of Littledale's variety which inhabits the western Tian Shan. Mr Miller points out that Littledale's variety "resembles the open *poli* type in the twist of the horn, but is considerably shorter in length although exceeding it in girth," and he states that the average length of the horns of an adult ram is 50 to 54 inches, the girth being 16 to 17 inches, and the spread 44 to 48 inches.

THE TIBETAN AMMON.

The Tibet variety (*O. a. hodgsoni*), sometimes found 15,000 feet above the sea-level, differs from the Altai variety in having short, thick, massive horns—the girth at the base being sometimes 19 inches—and a throat ruff, consisting in old males of long white hair.

As the urial and Tibetan argali are said to have interbred, it is possible that *O. a. hodgsoni* has contributed to at least some of the Asiatic domestic breeds.

To what extent, if any, the Saiar Mountain *ammon*, the *ammon* to the north of Lake Balkash, and the Kamskatka *ammon* have taken part in forming domestic breeds, is not known. Whether the argali, urial, or mouflon has contributed

most points to any given breed it will probably never be possible to determine, and until a series of skeletons of sheep, wild and tame, is available for study in the British or Royal Scottish Museum, no real progress can be made in working out the origin and relationships of the numerous varieties of sheep now living under domestication.

In conclusion, a word may be said as to when domesticated sheep reached Britain. In the part of this paper already published it was mentioned that sheep lived in England about the beginning of the Quaternary Period, along with the rhinoceros and certain ancient types of elephants and other ungulates. But as this race (*O. savini*) died out in England during the earlier part of the Ice Age, for thousands of years there were neither wild nor tame sheep in Britain. When eventually the climate improved at the end of the fourth cold phase of the Great Ice Age, sheep might have reached Britain with the reindeer when on their way from south and central France to the north of Scotland. At and above Windsor, where many members of the migrating herds lost their lives crossing the Thames, reindeer bones are numerous, but not a single sheep bone has hitherto been found. Reindeer hunters, who followed in the wake of the retreating reindeer, had neither sheep nor any other domestic animals. As the highly artistic, long-headed, palæolithic hunters moved northwards in pursuit of the reindeer, their place was taken by another long-headed race which, in the absence of reindeer, used red-deer horns for making harpoons and other implements. These red-deer hunters (sometimes known as the Azilians) had many settlements between the Pyrenees and the M'Arthur caves near Oban, but there is no evidence that even the most advanced members of this Transition race had any domestic animals. In course of time a mixed race reached Britain, consisting of both long-headed and round-headed individuals.¹ The first bands of this mixed race differed but little in their culture from the reindeer hunters, but the later bands, in which round-headed individuals preponderated, had polished stone (Neolithic) implements, had acquired some skill in weaving and making pottery, and they brought with them the peat or turbary sheep, the small Celtic shorthorn, the pig, goat, and dog. It is noteworthy that the sheep brought to Britain by these early Neoliths, like the sheep in the oldest deposits of the Swiss lake-dwellings, and some of the modern peat-sheep of Shetland, though apparently a domesticated urial, only measured about 22 inches at the shoulder—

¹ During the Early Stone (Palæolithic) Age all the races inhabiting Europe were long-headed. Since the beginning of the New Stone (Neolithic) Age Europeans have been getting more and more round-headed. It is said Burns belonged to the long-headed, and Shakespeare to the round-headed, type.

i.e., the sheep of the Lake-dwellers was quite 10 inches smaller than the wild urial of Turkestan. Some centuries after the arrival of the Neoliths (a mixture of round- and long-headed races) a nearly pure round-headed race reached the south of England, who possessed bronze as well as stone implements. This race, which had horses as well as cattle, pigs, goats, and dogs, had, in addition to turbary sheep, "four-horned" sheep, and sheep which measured over 30 inches at the shoulders, with horns and cannon-bones like those of the small wild *ammon* (*O. a. nigrimontana*) still living on the Karatau Mountains to the north of Samarcand.

If the sheep bones from the alluvium of the Thames Valley belong, as I believe, to sheep in part descended from a small variety of *ammon*, it follows that, even before the coming of the Romans, Britain had sheep which included the argali as well as the urial and mouflon amongst their ancestors.

Forty years ago Darwin wrote: "Most authors look at our domestic sheep as descended from several distinct species. Mr Blyth, who has carefully attended to the subject, believes that fourteen wild species now exist, but 'that not one of them can be identified as the progenitor of the interminable domestic races.' M. Gervais thinks that there are six species of *ovis*, but that our domestic sheep form a distinct genus now completely extinct. A German naturalist believes that our sheep descend from ten aboriginally distinct species, of which only one is still living in a wild state. Another ingenious observer . . . infers that the sheep of Great Britain alone are the descendants of eleven endemic British forms."¹ By examining the remains of sheep from Quaternary deposits, by studying the available skeletons of wild species and of primitive and improved breeds, and by making crossing experiments, I have obtained evidence that all three Old World kinds of wild sheep—viz., the argali (*O. ammon*), urial (*O. vignei*), and mouflon (*O. musimon*)—have taken part in forming our domestic breeds. I have also incidentally pointed out that the urial has contributed to the making of domestic breeds through the turbary (peat or heath) breeds, and perhaps also through fat-rumped and fat-tailed breeds, and that in Bokhara and Russian Turkestan the *ammon* or argali is still taking part in maintaining domestic breeds.

¹ 'Animals and Plants under Domestication,' vol. i. p. 97. London, 1875.

BREEDS OF SCOTTISH SHEEP.

I. CHEVIOTS.

By WILLIAM BARBER, M.A. (of Tererran), Superintendent of Live Stock,
Board of Agriculture for Scotland.

THAT the breeding of sheep has interested men in all ages of the world's history is well known, but what varieties were favoured, and how they came to be produced or evolved, is not at all clear. Sure it is, however, that even from the time of Jacob, if not earlier, certain principles were understood, and certain practices were followed, with the object of producing offspring with desired characteristics. How far the ideas of the patriarch and others are supported by the conclusions of modern research it is not for us here to discuss, nor do we attempt to trace through history the theories and beliefs of which now and again we get a glimpse,—as, for example, this interesting note which is found in the writing of an ancient agriculturist, giving expression to an opinion which we have heard maintained by some. Virgil in his 'Georgics' says—

“ Reject him, though the ram himself be white,
Under whose ousy palate lies concealed
A black or spotted tongue : for with black spots
He'll stain the fleeces of his future race.”

First Appearance of Sheep in Great Britain.

As to the introduction of sheep to the British Isles history is quite silent. No mention occurs in the ancient writers of any importations of sheep, and from this fact it may probably safely be concluded that sheep of a sort had been present in these islands from the very earliest times. During the days of the Roman invasions, when Britons were found in clothing of skins, and manufactures of all kind had yet to be introduced, sheep must have been common, because in a panegyric on Constantine the Great, in which the happiness of Britain is eloquently described, and its advantages in regard to sheep stock depicted, there occurs this passage: “Innumerable are thy herds of cattle, and thy flocks of sheep, which feed thee plentifully, and clothe thee richly.” From this it seems evident that the sheep of Britain, even in those far-off days, were of no little account, and we may surmise that it would pay the Romans

well, even at the expenditure of considerable trouble, to erect manufactories where the wool could be handled.

This, of course, tells us nothing about the breeds of sheep which existed, or about their distribution in Great Britain. Many centuries later names of breeds came to be known, but the beginnings of these breeds are lost in obscurity.

Tanfaced Sheep.

Turning to Scotland, we find writers alluding to "a good many native breeds in different parts." Among these there would probably be the breed represented by the diminutive sheep of the Western Islands, and the tanfaced sheep described by Culley,—one of the oldest, as he is said to be one of the most reliable, of early writers on the subject of live stock. These sheep, he says, had no horns. Their faces in general were of a dun or tawny colour, and their wool was fine and mixed, and "streaked with black, brown, red, and dun." They are said to have weighed only 28-32 lb. when four or five years old, and, except in the matter of fineness of wool, were considered much inferior to the Blackface of Culley's time. Writing in the eighteenth century, he said: "I am inclined to think them too tender and delicate for these mountains (but which mountains is not made clear), and I shall not wonder if, in a few years, they are driven out by that hardy race of mountaineer, before described under the title of the 'short' sheep, or more probably by the Cheviot sheep, from the exertions now making by the British Wool Society to introduce them into those districts on account of the superior quality of the wool." The tanfaced sheep were at one time fairly common in Nithsdale, Annandale, and Galloway, but from these districts they have long ago disappeared. They lingered, however, into the nineteenth century in some of the more mountainous districts of Aberdeenshire and Fifeshire; but from Culley we assume they were practically the only sheep known in the Highlands till the arrival there of the "Heath" and Cheviot breeds.

Cheviot Breed derived in part from Tanfaced.

That the Tanfaced entered to some extent into the composition of the breed we now call Cheviot can scarcely be doubted, although in the course of years most of the outward characteristics of that ancient race have disappeared. In Baillie and Culley's 'History of Northumberland' (p. 110) there is a note: "Many of the Cheviot sheep have dark faces, and they were more so formerly. We were informed by Mr Chisholm, Mr Redhead, Mr Marshall, &c., that these dark-faced ones grew equally as

fine wool, were as hardy, and were equally as good thrivers as the white-faced ones, but that the people to whom they sold their sheep, especially tups, preferred white-faces, for which reason they have endeavoured to get quit of dark-faces." To this day, in almost every flock, dun legs are seen now and again, and even a yellow dun tinge in the face is not unknown. Shepherds declare that ewes with these colourings are not the first to fail in a hard winter or backward spring, and in spite of the strongly held opinions that the head and legs of the Cheviot should be spotless and white, there are quite good judges who say they cannot understand the tabooing of a trace of tan on the head and legs. "The Brockit-face," says Mr Barrie of Sundhope, "was one of the chief characteristics of the original Cheviot, and is an infallible indication of hardiness, milkiness, and self-reliance."

Early Stages in the Evolution of the Cheviot.

It seems impossible now to trace the steps which were taken in the early evolution of the Cheviot breed, or, as they were known previous to 1792, the "white-faced or long" sheep. For example, one writer (Mr Thos. Lawson, 1860) says: "The first direct mention of Cheviot sheep occurs in 1372, when large tracts of the Cheviot hills are described as covered with a small but very hardy race of sheep, and in 1792 they are noted as being without horns, of open countenance, lively eyes, long bodies," &c. I have not been able to trace the authority for the first statement here made. The name "Cheviot" was not used in connection with the breed till late in the eighteenth century, and the long space of 420 years, between 1372 and 1792, is passed over by this authority without a reference of any kind. There is a tradition that the white-faced sheep of the Border are representative of sheep which came from Spain, or, at all events, that sheep from the Continent of Europe mated with the native breed and affected its future history and character; but certain it is that of this there is no proof, nor is it to be expected that proof will now be forthcoming. The Merinos were probably the most widely distributed of all sheep during the middle ages, and they were early very fully developed in Spain and other countries. It is known that 3000 Merinos were brought to England in the time of Edward V., about 1480, and again a similar consignment in the days of Queen Mary I. and her Spanish husband (*circa* 1560). What came of these fine-woolled sheep it is difficult to discover, but it is a matter of history that George III. was a keen supporter of the breed, and got consignments in 1787 and again in 1791. Whatever was the fate of the earlier flocks, those of George III. were

dispersed throughout Britain, because it is known drafts were sold from the Royal Farm at Kew, and exportation of the sheep was very strictly prohibited on pain of "branding on the forehead and loss of the right hand."

Of course it is only a conjecture, but it does not seem improbable that some Merino blood may have got intermingled with that of some of the old native breeds of the North of England and South of Scotland. Some of the qualities—especially of the wool, which first attracted the attention of those who were attempting to improve and encourage sheep-breeding 150 or 160 years ago—may have been derived, more or less directly, from stray representatives of the Merino breed.

Sheep and Wool Industry in Middle Ages.

In many parts of Europe sheep-breeding and the wool industry flourished in the middle ages, and the wool merchants of Flanders visited Berwick regularly, and had agents there constantly. Berwick was early one of the most important seaports,—what a historian terms "the emporium of commerce of both kingdoms" (England and Scotland); and, again, "the great mart of foreign commerce." There was trade with every nation, from Norway to Italy, and in lists of its exports wool is always mentioned first. While there is nothing actually known, it does not seem to be impossible—perhaps not even improbable—that some Continental sheep were brought over,—maybe during the years succeeding the capture of Berwick by the Scotch in 1318. For a period during the long dark time of the "War of Independence" Berwick had been held by the English, and its flourishing commerce of an earlier epoch was almost completely destroyed. After 1318, for at least twenty-eight years, it again became prosperous, and mayhap it was during these years that a variety of sheep, which had an important influence, and which came to be called the "white sheep," was introduced. This at any rate we know, that Parliament exempted the white sheep from taxation. In 1357 King David II. of Scotland returned from captivity in England, and a very considerable ransom had to be paid for his release. To meet this ransom the Scottish Parliament resolved to give all the wool and wool fells in the kingdom to the king at the rate of four merks for the sack of wool, and the same sum for every parcel of 200 fleeces, doubtless expecting the king to make a good profit. Certain sworn Commissioners were appointed to compile a minute and accurate account of the rent and produce of the whole land of the realm. From this account were specially exempted "white sheep."

Again, in 1366, a census was ordered by Parliament of all the lands in the kingdom and what was on them, even the goods of the husbandman—an ancient census of production. Exemption was made in favour of the “white sheep,” in respect of which no contribution to the expenses of the country or Government was asked. Later, in 1396, Parliament once more ordered a general contribution from goods, cattle, &c., “white sheep” being again exempted (Fraser-Tytler’s ‘History’). In Robertson’s ‘Parliamentary Records’ it is said, p. 107, “The exemption in favour of the white sheep in the taxation by the Parliament of 1366 was intended probably as an encouragement to the introduction of a new breed.”

Sheep-Breeding in the South of Scotland in the Fourteenth Century.

Long before the “War of Independence” sheep-breeding in the south of Scotland seems to have been extensive—but only in the south—for history records that in 1369 Parliament, “to pacify the dangerous murmurs of the lowland districts, which produced wool and paid a heavy tax on every sack to the Crown, determined that those northern counties where no tax was collected (sheep not having been introduced), and which abounded in produce other than sheep, should either levy a tax on that produce or the Chamberlain should remove the court at certain seasons of the year to these northern counties, to be supported there,” which latter course was followed.

No further mention of “White Sheep” later than 1396.

There is no mention of white sheep in Scottish History, so far as observed, later than 1396, so it is probable they would after that date have to bear their due share of any taxation that was imposed on the woolly tribes, but there is an interesting if somewhat irrelevant note in Sir Walter Scott’s ‘Tales of a Grandfather.’ After describing how James V. in 1529, under the pretext of an important hunt with hawks and hounds, led an army into the Border country, hanged Scott of Tushielaw and Cockburn of Henderland at their own gates, also Johnnie Armstrong and his thirty-eight gentlemen, and many others, he says, “James was also able to draw profit from the land that the Crown possessed near the Borders, and is said to have had 10,000 sheep grazing in Ettrick Forest under the charge of one Andrew Bell, who gave the king as good an account of the profits by the flock as if they had been grazing in the bounds of Fife, the securest part of the kingdom at that time.” Honest Andrew apparently has left no account of what breed of sheep

the king's were, but he possibly had his share of the "white sheep," although Ettrick Forest in later years was mostly under Blackfaces—the forest breed. The want of exact agricultural returns in the early days of the sixteenth century is not surprising. Andrew would scarcely be able to read or write, nor would he be ashamed of the fact, for only a very few years earlier we have the Earl of Douglas saying, "I thank my Saints, son of mine cannot pen a line, save Gavin." Gavin was Bishop of Dunkeld.

Burns's Pet Ewe.

These and other indefinite statements which might be quoted illustrate how difficult it is, till nearly the end of the eighteenth century, to get information which is reliable. Even Burns in his elegy on his pet ewe "Mailie," while proving she was not of the Moorland, Heath, or Blackfaced breed, does not tell us, on the other hand, what she was.

"She was nae get o' moorland tips,
Wi' tawted ket an' hairy hips,
For her forbears were brought in ships
Frae yont the Tweed :
A bonnier fleesh (fleece) ne'er cross'd the clips
Than Mailie dead."

Merinos in the Highlands.

It may be mentioned, in confirmation of the idea that the Spanish Merino had its place in the evolution of the Cheviots, that even so late as 1820, when Cheviots had become fully established in the Highlands of Scotland, Patrick Sellar and others had numbers of Merino sheep in Sutherlandshire. After giving them a very fair and full trial, Mr Sellar wrote, comparing them with other breeds, especially the Cheviot: "The Cheviot sheep are true moss and mountain sheep ; when left to themselves, as they ought, as much as possible, in such a country to be, they scatter and straggle in threes and fours over the waste, and a score of them are rarely to be seen together. The Merino sheep which I have bred pretty extensively in the Highlands is of quite a different nature. They are decidedly mountain sheep, but not moss sheep. When pinched for food they resort to the Alpine plants which grow in the peat-bog, but they will not do so of choice. They range all in one lot—that is, of whatever number the flock or hirsle consists, it is found all in one place, feeding like a drove passing through a country ; and they are either on one of the spots of fine grass in the mountains or travelling from one of these to another. Nothing will induce them to do what the shepherds call 'lying abroad'

upon the waste, or to mingle with sheep of any other kind! After taking their walk every day over their range of pasture in the way I have described, they form a sort of camp at night, on the highest part of their ground, and may be certainly found there at daybreak next morning, lying so closely that they touch each other, the strongest sheep outside and the weak in the centre. Owing to the disposition of the Merinos they are not suitable to these wastes of peat-bog, not that they do not thrive and yield wool in abundance and of the first quality, but that as three-fourth parts of the wastes consist of Alpine plants which they reject, the same quantity of Sutherland ground will keep three hundred Cheviots that will maintain one hundred Merinos, and that with half the care and one-third part of the risk in winter. I have bred up my Merino flock from two hundred to six hundred of as fine sheep of the kind, and as thriving too, as ever stepped on hill ground. They have paid me very well, yet I am about to cross them with Cheviot, and that on this account, that they are not the kind that will suit for Sutherlandshire.”—(‘Farmers’ Magazine,’ 1820.) If Merinos were “crossed with Cheviots” in Sutherland, it does not seem impossible that in the earlier days the same process to some extent was carried out on the Borders, either directly or through the Southdown, which, at least one writer thinks, is nearly related.—(Brown’s ‘Rural Affairs,’ 1811.) In fact, Sir John Sinclair himself, in 1792, wrote to Young for his ‘Annals of Agriculture,’ “I am now perfectly satisfied that three distinct breeds of sheep should be reared in this country: the Leicestershire in the plains; the Cheviot, *crossed by the Spanish*, in the hills; and the Shetland breed in the small islands, or along the coast where the grass is short and kindly from the sea spray.” And Douglas, in the ‘Farmers’ Magazine,’ 1803, says: “Various crosses of the native breed are attempted by means of rams of the Southdown or Hereford (Ryeland) breed, or those *with a dash of Spanish blood in them*.”

More Authentic Statements.

When men began to write on matters agricultural and pastoral, the eighteenth century had wellnigh run its course, and then it was that, for the first time, authentic statements about the Cheviot breed were made. For example, we find the following statement in Napier’s ‘Store Farming’: “The Cheviot hills, which, notwithstanding their elevation and their conical peaks, are covered, excepting in boggy parts, with a fine green turf affording excellent pasturage for sheep, are the original nursery of a peculiar breed called the ‘Cheviot,’ which in Scotland contests for superiority with the Blackfaced. On the Cheviot range the breed has existed from time immemorial.”

All lovers of the Cheviot would really like to know what manner of sheep these were which had "existed from time immemorial." A significant statement is made by Sinclair in the General Report on Live Stock, 1814. Speaking of Cheviots, he says: "The first improvement that has been noted is said to have been made about 1760, when the native breed (*perhaps at an earlier period somewhat similar to the ancient race found in the Highlands*) was crossed with tups brought from Lincolnshire." Of the "ancient race," so far as we can judge, there had been two branches, one with light thin body and long tail, with varying colours of wool, face, and legs; the other either akin to, or the same as, the Scandinavian race, the peculiar feature of which is the short, almost triangular, flounder-like tail. The latter branch of the race is represented by the Shetland sheep of to-day, but the former branch, unless it be in the remoter islands of the west, is nowhere to be found in Scotland; but in Wales and Ireland its not far-distant relatives live and thrive ('Low's Agriculture').

Attempt to Improve Cheviots.

In compiling his report, we suspect it was of the sheep last mentioned that Sir John Sinclair was thinking when he wrote of the "ancient race found in the Highlands," and not improbably by his time the dun faces and tawny legs had been greatly bred out from the sheep of the border—aided perhaps by the influence of the Spanish or Merino sheep. The form and size, however, evidently left much to be desired, although the wool was of an undoubtedly high quality. Hence the introduction about 1760 of the Lincolnshire sheep, which speedily left their impress.¹ Whether sheep with a dash of the Dishley or Leicester blood were also used during this period of evolution of the Cheviot sheep, to any great extent, is not so certain, but there can be no doubt that they were used (*vide* Footnote, and also Fig. 29). However, by 1814 things had so far advanced that we have it recorded in Sinclair's report that "breeders of the present day have had recourse to no other means of improvement than careful selection."

¹ "Mr Robson of Belford, now of Chatto, says he improved the shape of his sheep very considerably, particularly the forequarters and the wool, in having less buttocks, by using three rams which he purchased in Lincolnshire thirty-three years since (*i.e.*, in 1761), and we know other instances of improvement by using tups of $\frac{1}{2}$ or $\frac{1}{4}$ Dishley blood. In all these cases we do not find the sheep less burly or the wool of less value, but the carcase materially improved."—Baillie and Culley's 'Northumberland,' p. 128 (1794). Further, Mr Douglas, in 'Agricultural Survey of Roxburgh,' asserted in 1797 that Mr Ormistoun of Mindrum, Mr Robson, then of Philhope, and Mr Ker of Riccaltoun, went to Lincolnshire about forty years ago, before the land there had degenerated, and purchased 14 rams. "As Mr Robson came to Scotland in 1760, and had these rams four or five years before he left Northumberland, it must have been about forty years since the experiment was tried" (*i.e.*, 1797—40=1757).

The British Wool Society.

In 1791 a society, called the British Wool Society, was formed by Sir John Sinclair, aided by a considerable number of noblemen and gentlemen. The object of this Society was to improve the quality of wool, which was rapidly becoming a very valuable commodity, by introducing the breeds of sheep most suitable to the different districts of Scotland. Directors of this Society were appointed to visit the principal parts of the country where sheep were bred, and it was during the investigations thus begun that Sir John "discovered" the breed of sheep which grazed on the Cheviot hills. He was struck by their quality, hardiness, and general utility, and became at once convinced that they were eminently well fitted for the Highland grazings. If these sheep hitherto had a distinguishing name at all they were called the Long Sheep, the Blackfaced—otherwise the "Heath" or "Linton" breed—being the short sheep. Sir John called them Cheviots,¹ and by that name they are now known all the world over. A contemporary writer, after giving a description of what he calls the original breed of the northern hills of Scotland as a small white-faced sheep, with very fine, long, combing wool, but which race is to a great measure extinct, says, "of all the breeds for the hilly parts of England and Scotland the Cheviot is by far the most valuable." He proceeds² to tell of two directors of the British Wool Society being not less charmed with the beautiful scenes of nature which they saw in the course of their excursions, and with the "pastoral and hospitable manners" of the shepherds of the Cheviots, than they were pleased to find this great perfection to which their flocks were brought—far surpassing the most sanguine expectations they could possibly have formed of them. So pleased were these directors with what they saw that they bought 50 rams and 100 ewes of the Cheviot breed, and these rams and ewes were retailed for breeding purposes at 36s. and 20s. respectively.

It was not to be expected that men with the interest of the country at heart would fail to tell what they had discovered on the Borders. Very soon the news spread, and, in fact, the directors of the Wool Society themselves acted as missionaries, as Young in a note in his *Annals* says: "Some of these very respectable and intelligent farmers propose this very year making a survey of the northern and western parts of Scot-

¹ In a note appended to his famous description of the Cheviot breed, in which the explanation of the name is given, it is said that those who wish to give the breed a trial should purchase from the flocks of Mr Redhead of Chatto, Mr Laing of Plenderleith, Mr Marshall of Blindburn, Mr Scott of Letham, Mr Pringle of Helterburn, Mr Robson, Mr Smith, and Mr Hedley.

² Young's *Annals*, 1791, p. 429.

land to see how far these districts are calculated for the Cheviot breed. As it is only within these ten or fifteen years that the breed has been brought to its present excellency, it accounts for their not being so well known as they deserve."

Cheviot Sheep in the North of Scotland.

The Cheviot sheep were taken north to Caithness and Sutherland in the last decade of the eighteenth century. Patrick Sellar's letter, in the 'Farmers' Magazine' for 1820, gives a graphic account of the state of Sutherlandshire before and after this important event in its history. "The people," he says, "seemed to be all of one profession, every man being his own mason, carpenter, tanner, or shoemaker, and work could not be got done in the country for love or money. Every man wore his own cloth, ate his own corn and potatoes, sold a lean kyloe to pay the rent; had no ambition for any comfort or luxury beyond what he then possessed." Sellar went to the north from Morayshire, as he himself says, "full of the belief that the growth of wool and sheep in the Highlands of Scotland was one of the most abominable and detestable things possible to be imagined." But on looking more closely into the matter he found extensive lands never touched, "and an infinity of fine Alpine pasturage, which by reason of the softness of the bog, or the inaccessible nature of the ground, the cattle of the Highlanders never cropped." While the cotton-grass was in spring flowering with great luxuriance, and fading untouched in autumn, the cattle were dying by the scores. "One gentleman, Captain Mathieson of Shinness, lost 200, I think, in one season." An inspection of the farms occupied by Atkinson and Marshall, two Northumbrians who were pioneer sheep farmers in Sutherland, made him "at once a convert to the principle now almost universally acted on in the Highlands of Scotland, . . . that the several hundreds of miles of Alpine plants flourishing in these districts, in curious succession, at all seasons, and out of the reach of anything but sheep, be converted into wool and mutton for the English manufacturer." Sellar took extensive grazings on the Duke of Sutherland's estates, Strathnaver, Culmaily, and Morvich. Those who had been earlier in the field—such as Atkinson and Marshall—had to encounter very serious opposition. "In truth," Sellar says, "the thefts committed on their property, and the damage done by the disturbance of their flocks, and by vermin of every description, exceeded the highest rent paid in Britain." These days, however, at the date of his interesting and valuable communication, were past and gone, and he expressed the hope that the gentlemen would be rewarded for their courage and

good conduct. "Whether the thing proved of advantage to them or not, however," he adds, "I am sure it has been of one great benefit to Sutherlandshire, in so far as it has established on the great scale Cheviot sheep and Cheviot shepherds, and connected Sutherland in the most intimate manner with the first stock county in the kingdom." — 'Farmers' Magazine,' 1820. It is interesting to note in this same communication, that amongst others interested in the developments proceeding in Sutherland at that time, the name of Mr Innes of Sandside is included,—a name than which, in its present representative, none is more universally held in esteem in the whole north land.

Some details of the Methods of working of the British Wool Society.

It was thus owing to the initiative and exertions of the British Wool Society that the Cheviot sheep got its first advertisement. This Society, mainly through the agency of Sir John Sinclair, as partly indicated above, arranged for a tour through many of the counties of England and great parts of Scotland, and we find the names of Mr Kerr Richardson, Mr Marshall of Blindburn, and Mr Andrew Kerr of Armadale in Strathmore, among those who, in 1792, took part in the tour, and one or more of them furnished reports. In these reports we have old and careful, and probably authentic, accounts of the Cheviots. Dealing with the sheep of Cumberland, the reporters did not consider the mountainous nature of the country any excuse for the comparatively inferior sheep they found there, and by way of contrast they stated: "On the Cheviot and Border hills a much superior sheep, both in size and shape as well as in the quality of the fleece, is successfully bred and reared, and though some of the Cumberland and Westmoreland hills are steeper than those on the Borders, yet we consider the Cheviot breed to be fully as capable as any other sheep to climb the steepest hill; whilst from the closeness and quality of their fleeces they are much better calculated than the present sort in these two counties (Cumberland and Westmoreland) to endure the hardships of a bleak and mountainous district." After having completed their visit to the various sheep districts of England and Wales, the reporters returned to Northumberland, and wrote: "Among all the different breeds of sheep that have been mentioned in the course of our report, we doubt much if any of them are calculated to exceed the shape and carcase of the Cheviot breed, which we apprehend cannot be materially improved for a hilly district. We have, however, purchased a few of the

Hereford breed (Ryeland), both ewes and rams, with a view by crossing to improve the quality of the wool, in particular to diminish the quantity of the coarse parts, and to increase the quantity of the fine. We also wished to try how far that breed, in a pure state, will suit our part of the kingdom." History repeats itself. The Board of Agriculture for Scotland has this season (1913) sent a few Ryeland rams to Shetland to cross with the native breed of sheep.

Tour through Scotland.

The tour through England was followed by a tour through Scotland, which seems to have been frankly undertaken with a view to advertise and publish the virtues and value of the Cheviots. Queensferry, Kinross, Perth, Blair, 'Dalwhinnie, Aviemore, Inverness, were in turn visited, and everywhere the reporter was satisfied it would be of immense advantage to introduce his favourite breed.

On the hills of Ross-shire, he notes, there are some fine sheep, but he regretfully adds, "as yet the common blackfaced breed have alone been tried." In Sutherland and Caithness he must have spent a considerable time, and he evidently induced several of the more important residents to adopt his views, and agree to import some Cheviot stock. To the West Highlands he next turned his steps—Fort Augustus, Kilmonivaig, Fort William, Glencoe, Inveraray, Luss, and Dumbarton. Everywhere this enthusiastic missionary secured converts, or at the least confirmed some possible waverers in what he believed to be the true faith. "On the whole," so he concludes his communication, "there cannot be a nobler field for the exertions of a public-spirited society than to establish a fine-woolled breed of sheep (Cheviots), and the proper management of them, in the Highlands of Scotland. The members of the British Wool Society may be assured that there is not a part of the country which I had an opportunity of visiting, which under proper arrangements is not fit to maintain the Cheviot breed of sheep, the profit of which is infinitely greater than that of any other stock that can be put upon it. I consider that to be a point of such consequence to the kingdom at large, that I should feel highly gratified if any feeble exertions in my power could have contributed to so desirable an object. Were that to take place, and were the Highlands of Scotland to be properly stocked with the most valuable of all animals, and were the wool produced in the country manufactured on the spot, there are few parts of Europe where the inhabitants could live in a state of greater happiness and prosperity."

Sir John Sinclair's Description of the Cheviot.

The Cheviot breed owed so much in the early days of its prosperity to the enthusiastic advocacy of its merits by Sir John Sinclair, that it is of interest to put on record his description of the sheep he admired so much. After enumerating the difficulties and hardships of a winter among the Border mountains—covered with snow two, three, or perhaps even four months in the year—he says: “Yet there, a species of sheep are to be found, taking all their properties together, equal, if not superior, to any other in Great Britain, for a mountainous district, and which will thrive even in the wildest part of it. These sheep are long bodied. They have in general 13, but sometimes 14, ribs on each side. Their shape is excellent, and their forequarter in particular is distinguished by such justness of proportion as to be equal in weight to the hind. Their limbs are of a length to enable them to pass over bogs and snows. They are polled, white-faced, and have rarely any black spots on any part of their body. They have a closer fleece than the Linton breed (Black-faced), which keeps them warmer in cold weather. They are excellent snow-breakers. They have never any other food, except when it is proposed to fatten them, besides the grass and natural hay produced on their own hills. Their value for feeding is rising every day—the draft or cast ewe now fetching, when lean, 12s. to 16s. apiece, and the wedders at 3 years old, 18s. to 20s. Their weight when fat, 17 to 20 lb. per quarter. The lambs off their mothers now fetch 8s. to 10s. apiece. From 8 to 9 fleeces of white wool make a stone, 24 lb., and from 6 to 8 fleeces when the wool is laid or smeared. The smeared wool is worth 18s. to 20s. per stone, and the white wool from 20s. to 22s. It will soon fetch 30s., if not 40s.” The anticipation that 40s. per stone would be paid for Cheviot wool was realised in 1863, '64, '65, '72, and '73.

Sir John Sinclair compares Breeds.

Sir John goes on to give illustrations of the superiority of his breed over their rivals the Blackfaces. “Mr Thos. Scott on Carter Fell, a mountain 1600 feet high, exchanged in 1776 with Mr Walter Hog, in Ettrick Forest, five whitefaced for as many blackfaced rams, but had every reason to regret the experiment, which was far from being the case with Mr Hog. Mr Roger Marshall at Blindburn in Northumberland came to that farm in 1769, and purchased the stock upon the ground, among which were many blackfaced sheep. These he completely ex-

tirpated and found it greatly to his advantage. So much convinced, indeed, are the farmers in the neighbourhood, particularly those of Ettrick Forest, of Tweeddale, and Liddesdale, of their superior excellence, that they are now converting their flocks as quickly as possible into the Cheviot breed."

The progress in the improvement of the breed is enlarged on by Sir John, who states that twenty years previous to his time it took 10 fleeces to weigh 24 lb., for which only 8s. could be got, whereas in his day 8 fleeces made a stone (24 lb.). He was quite satisfied with the shape of the animal, but he felt the wool required (1) to be still finer in the pile, (2) shorter in the staple, (3) thicker in the coat, and (4) more equal in quality—points of great importance. "These are qualities," he says, "which the Spanish, the Hereford, and the Southdown breeds possess in very great perfection; and if once the hardiness, the excellent carcase, and the other advantages of the Cheviot breed were united to these properties, hill sheep would be brought to their greatest height of perfection."

An Ideal Hill Farm.

The ideal farm, according to Sir John, would carry about 600 ewes, 370 three-year-old wedders, 370 two-year-old wedders, 160 gimmers, and 500 hogs (ewes and wedders). There would also be a pack of 45 to 60 sheep for each of four shepherds—say 200 sheep extra—and pasturage for 6 or 7 cows and for 4 or 5 horses. The rent of such a farm is calculated as follows:—

600 ewes for pasture at 5s. each	£150 0
370 wedders at 3s.	55 10
160 young ewes at 2s. 6d.	20 0
370 Dinmont wedders at 2s.	37 0
560 lambs at 2s. 6d.	62 10
	<hr/>
	£325 0

The annual proceeds of the sales of wool and draft stock might be—

2000 fleece at 3s.	£300
160 draft ewes at 13s.	104
370 three-year old wedders at 20s.	370
	<hr/>
	£774

But the net proceeds, it is anticipated, would soon be much greater owing to the rising popularity of Cheviots and the great improvements which were being brought about. As these were

the days before valuations, and especially before acclimatisation values had been thought of, the expense of taking a farm was comparatively small. By purchasing stock in July or August Sir John calculates there would only be required—

1000 draft ewes at 13s.	.	.	.	.	.	.	£650
20 rams at 50s.	.	.	.	.	.	.	50

£700

which is a light capital outlay compared with what is needful now when ten times the amount of the rent of the farm is the very least that may be estimated.

Changing of Stock.

The views of Sir John Sinclair on the changing of the stock on Highland farms are very interesting, and his apparent confidence that great profit and success would follow the change is refreshing. In his enthusiasm he even refers to the "fortunate proprietors who have Highland estates in their possession." "A cattle farm," he says, "of £100 per annum, if put under the coarse-woolled Tweeddale breed, becomes at once worth double that sum; but if it is stocked with the fine-woolled Cheviot breed it is well worth £400, and will probably be worth £800 as soon as the improvements now carrying on, for augmenting the value of the Cheviot breed, are brought to perfection."

Looking at the matter from the point of view of the Highland district as a whole, he says: "The Highlands of Scotland may sell at present, perhaps, from £200,000 to £300,000 worth per annum of lean cattle. The same ground will produce twice as much mutton, and there is the wool into the bargain. If covered with the coarse-woolled breed of sheep, the wool might be worth about £300,000, the value of which can only be doubled by the art of the manufacturer. Whereas the same ground under the Cheviot, or true mountain breed, will produce at least £900,000 of fine wool, the original value of which the manufacturer can quadruple, and consequently can make worth £3,600,000 in woollen goods. At the same time it is necessary to observe that the importance of this great alteration, both to individuals and to the public, will principally depend on the introduction of a proper breed of sheep."

Depopulation.

Sir John alluded to the objection, so often taken, that the introduction of sheep meant the depopulating of the country.

He considered it to be his duty, having taken such an active part in the promotion of the improvement of British wool, to point out how, by the introduction of sheep to the north, the population might be increased rather than diminished. Proprietors, he says, should first find skilful farmers to whom the land would be let, or failing resident tenants, capable overseers. A fox-hunter or trapper was the next necessity, then an efficient woodman or forester. Ditchers and drainers, thatchers and fencers, were also required. When these preliminary arrangements had been made, experienced shepherds, who would gradually train assistants, would be employed in considerable numbers. When all these wants are supplied, he concludes: "Though many small tenants by joining their capital together, and purchasing from 250 to 500 sheep each, and hiring common shepherds, might perhaps continue in the possessions which they formerly enjoyed, yet such an alteration (in the whole system, as he anticipated) can hardly be effected without removing some individuals. These, therefore, the proprietor ought to collect into small villages properly situated for the purpose of carrying on either fisheries or manufactures."

Defects of Cheviot Sheep.

It is perhaps only to be expected that Sir John Sinclair and Mr Patrick Sellar should, in their enthusiasm, dwell upon the good features of the Cheviot of their day, but other writers of the time remind us that much that was to be desired was wanting both in carcase and wool. Culley, in his intelligent and discriminating way, says: "The best kinds have a fine open countenance, with lively prominent eyes; body long, fore-quarter wanting depth in the breast, and breadth both there and on the chine; fine, clean, small-boned legs, thin pelts; weight of carcase when fat from 12 to 18 lb. per quarter; fleeces from $2\frac{1}{2}$ to $3\frac{1}{2}$ lb. each, and sold in 1792 for 11d. per lb. The wool is not all fine, there being in a fleece of 3 lb. weight only 2 lb. of fine wool, and 1 lb. of coarse wool worth only 6d. per lb."

A want of depth and breadth of the chest, and of breadth on the back line, are mentioned not only by Culley but by others, and the pictures of the sheep of his day bear out the justice of his criticism (Fig. 28). The unevenness or want of consistency in the fleece of a sheep is also a grave defect. Even to this day it is no easy matter to find one absolutely right in its wool all over, although the proportion of coarse wool to fine will not be so great now as formerly.

Severe Storms.

In addition to these defects pointed out by Culley, and notwithstanding the statements as to their hardiness by their admirers, it is to be feared that in some of the seasons which were characterised by severe storms, such as are described in early records as occurring in Southern Scotland, Cheviots made only an indifferent fight for their existence. There is a tradition that in 1620 the country was visited by a storm—always referred to as the 13 drifty days—which did incalculable harm, and the very mention of it to a shepherd of a former generation, on a winter night when the wind was howling, never “failed to impress his mind with a sort of religious awe.” For thirteen days and nights the snowdrift never abated; the ground was covered with frozen snow when it came on, and during all that time the sheep “never once broke their fast.” About the fifth and sixth days the young sheep began to fall into a torpid, sleepy state, and were dead before next morning. About the ninth or tenth days the shepherds began to build up huge semi-circular walls of their dead in order to afford some shelter for the remainder, but with little effect, for by that time “they were frequently seen tearing at one another’s wool with their teeth.” When the storm abated, on the fourteenth day, on many a high-lying farm there was not a living sheep to be seen, and “about nine-tenths of all the sheep in the south of Scotland were destroyed.” In the extensive pastoral district of Eskdalemuir, which maintains upwards of 20,000 sheep, it is said that “none were left alive but 40 young wedders on one farm and 5 old ewes on another.” Nor was that storm of 1620 the only one, for before the century closed there was another, the story of which James Hogg, the Ettrick Shepherd, tells in these few pregnant words: “The next memorable event of this nature,” he says, “is the blast of March, which happened on the 24th day of that month, in the year 16—, on a Monday’s morning; and although it lasted for only one forenoon, it was calculated to have destroyed upwards of one thousand scores of sheep, as well as a number of shepherds.” We are indebted to the same authority for this further note. “But of all the storms,” he proceeds, “that ever Scotland witnessed, or I hope ever will again behold, there are none of them that can once be compared with the memorable 24th of January 1794, which fell with such peculiar violence on that division of the south of Scotland that lies between Crawfordmuir and the border. In that bounds there were seventeen shepherds perished, and upwards of thirty carried home insensible, who afterwards recovered. But the number of sheep that were lost far outwent any possibility of calculation.”

Prices of Sheep in certain Years.

We have elsewhere another note relating to this fearful storm of 1794 in the diary of Alexander Laidlaw¹ of Bowerhope, preserved by Napier in his 'Store Farming.' In this paper we have an interesting side-light on the prices of sheep during the latter half of the eighteenth century.

So far there is no mention of the breed of sheep which suffered so badly in the various storms, but in 1799, in describing another bad season, reference is made by Laidlaw to the Cheviots. "Bengor Burn was the farm farthest up the river Yarrow, which had at that time an entire stock of Cheviot Sundhope, in Yarrow, and Henderland, in Meggat, had Cheviot hoggs and gimmers, and Bowerhope had 120 three-year-old ewes of that breed. All the rest of the sheep about that part of the country were of the blackfaced or forest breed. On the Berry Bush there was a stock of Cheviots. Crosslee had hoggs and gimmers, Tushielaw might have a few, but the greater part were Blackfaced." All Ettrick, it is said, with the exception of these farms from Singlee upwards, had only the forest breed. "Now," says our shepherd, "every person who speaks impartially will allow that the forest breed are not near so easily killed with bad seasons as the Cheviots are. This might be shown by many striking examples if necessary; but all I mean by the observation is to show that, had the country been all stocked now and formerly with Cheviot sheep, the losses would have been much greater."

Progress of the Breed.

In spite of this lesson, however, we find the following note in Laidlaw's Diary, dated 1805-6: "Most of the country is now stocked with Cheviot sheep, except Bowerhope, Crosscleuch,

¹ Whether it was the effect of bad seasons or other cause we have no means of knowing, but there are recorded what would seem to have been extraordinarily low prices for sheep and lambs. The following illustrate the point:—

1734. Bowerhope, wedder hogs were sold at Stag Show this year at 3s. and 2d.

1740. Was an excessive bad season, and many persons were entirely ruined by it.

1750. At Over Cassock roup this year ewes and lambs were sold at 9s.

1760. Stock appears to be rising. Phaup wedder hogs sold at 5s. and Ettrick-house at 4s. 6d.—all clad.

1765. The Dalgleish ewes and lambs were sold at 6s. and 8d.—all clad, one to the score.

And so on the notes go till 1794, when it is recorded, "on Saturday, January 25th, happened the worst day in the memory of the oldest person now living. The blast lasted about twenty hours, and killed many men and sheep."

and Riskinhope, with some of the Meggat farms, besides Blackhouse and Craig o' Douglas." Still, Blackhouse was not wishful to be left out altogether of the progressive march towards an almost universal white-faced breed, for we read in this further note for 1806-7: "Being bad weather, Blackhouse, in attempting to raise Cheviot wedder hogs, for two or three years, about this time, lost nearly one-third of them, or from 30 to 33 per cent annually."

Apparently Alexander Laidlaw, shepherd at Bowerhouse, was somewhat prejudiced against the Cheviots, as many others must be admitted to be prejudiced in their favour, but no doubt Napier—who lived and wrote at least half a century before his time—in quoting him so much, was endeavouring to show that many of the great and serious losses which the recurring bad seasons inflicted on the sheep farmer could have been prevented by a little foresight and energy. The country seems to have been devoid of stells or shelter-belts of any description, and the idea of a provision of a supply of natural hay had never yet entered the farmers' minds. While storms still visit us more or less severely, their effects are very materially mitigated by the modern arrangements of every well-appointed hill farm. That such arrangements were practically unknown in Napier's day (1822) seems evident from a dialogue which he relates:—

"'Gude day to you, Captain; this has been desperate weather of late and vera ill upon the sheep.'

"'Deed it has, Mr ——. I hope you have lost none.'

"'No mony.'

"'What feck, think ye?'

"'I dinna ken; there was just a wheen hoggs washed doon the burn that were couring for shelter aneath the heughs.'

"'That is very unfortunate! You would have been the better of some stalls.'

"'Aye, I dinna ken but I might.'

Query—Are they built yet?

An old cynic wrote:—

"When the devil was sick, the devil a saint would be;
When the devil got well, the devil a saint was he."

And farmers, beyond all classes, are ever ready to forget that the evil day which has been will come again—perhaps not next year, nor the next, but sooner or later—and that the time to prepare for the day of adversity is undoubtedly in the day of prosperity.

Criticism of Cheviots.

Of the criticisms noticed of the Cheviot of the early days, those directed against his frame, and the consistency of his wool, seem to have had more justification in fact, than those against his hardiness. "The best kind," wrote Culley, "are certainly a very hardy and valuable mountain sheep." The defects in shape and wool he reported as improving, and he gave no little of the credit for this, as mentioned above, to Mr Robson of Belford (later in Chatto). This breeder brought from Lincolnshire three rams which he used with good effect among his flock—influencing not only the wool and the frame but the feeding quality as well. "The breed of sheep," says Culley (in his 'Northumberland') "which brings the most profit to the farmer will always be pursued by him whatever his situation; but that object (profit) is not to be obtained, we presume, in this district from fine wool alone. Perfect mountain sheep should be hardy, active, well formed, and quick feeders—qualities which will always recommend them to the grazier, who will never purchase a slow-feeding animal when he can get one of a different sort, though at a considerably advanced price. But if to these qualities, so essential to the sale of a mountain farmer's stock, can be added a fleece of fine wool, a breed of sheep would then be obtained, the properest for a hilly district of any we have yet seen. There is little doubt but this may be accomplished by proper selection; and probably the best kind of Cheviot sheep, from their hardiness, and producing a portion of fine wool, are the properest stock for laying the foundation of so desirable an improvement." And he adds: "That breed is the best which brings the most profit, in fleece and carcase jointly, from the same ground in equal times."

"Epicurus," writing to the 'Farmers' Magazine' in 1803, made some severe strictures on the Leicester sheep, then being much improved. He said their mutton cannot be eaten by any man of taste, and "is only fit to glide down the throat of a Newcastle coalheaver." "How different," he asks, "from this is the delicate flesh of the small Down sheep, or those of the Cheviot hills. The latter, a hardy race, of all others the best fitted for improving the sheep and wool on the mountains of Scotland, also carrying wool which can be manufactured into excellent cloth." There was evidently all over an idea that the future of sheep-farming was with the Cheviots, and consequently, as another writer in the same volume of the 'Farmers' Magazine' says, "the demand for Cheviot sheep to other Highland districts has increased every year since they were first introduced." And again, writes A. S. L., evidently an enthusiastic supporter of the blackface breed, "Such is the rage for

ameliorating the quality of wool—for another property the animal has not” (only a very prejudiced blackface enthusiast could say that)—“that a purchase is annually made of Cheviot rams for crossing the ancient or Forest breed. But,” he adds, “it is not possible, considering the nature of the animal, soil, and climate, that they can ever have a stock equal in hardiness and healthiness to that they are now resolved on the destruction of.” (See Figs. 30, 31, 32, and 33.)

Others beside this writer were convinced of the hardiness of the blackfaces. Wight, the reporter on the ‘State of Husbandry in Scotland’ in 1778, makes a very general assertion: “Through all Scotland sheep are only of two different kinds—termed the ‘short’ and the ‘long.’ It is a great question with farmers whether ‘long’ sheep would answer in ground stocked with ‘short,’ but all agree that ‘short’ sheep will do everywhere.”

It was not that men loved the blackfaces less, but because they loved the Cheviots more, for they thought they would pay them better, and all over the tendency to change was felt; in the Highlands, as we have seen, on the Borders as we now shall see; and of central districts such as the Lammermoors, it was written in 1803: “Trials are making of the Cheviot breed, and, it is said, with a promising appearance of success.”—‘Farmers’ Magazine.’

Cheviots in the South-west.

But for a little we must notice the progress of the change that went on in the western districts of the south of Scotland. Till the middle of the eighteenth century—and perhaps even a little later—the blackfaced sheep, with a sprinkling of the old tanface, occupied all the land under sheep. From about that time the Cheviot seems to have made progress, pushing westwards, as some twenty years later he pushed northwards, and by degrees not only Roxburgh and Selkirk knew him well, but Dumfriesshire, Galloway, and parts of Lanarkshire and Ayrshire received him as one who had come to stay. It was the quality of the wool of the Cheviots which induced the grazier to try them. No violent change in the management of the farms was made, and probably the plan adopted by Mr Irving of Polmoodie—a well-known high-lying farm in the Moffat district of Dumfriesshire—was followed by many of his contemporaries and successors. His story, dated 1791, in very much his own words, as recorded in Young’s ‘Annals of Agriculture,’ vol. xvii., is to the effect that in 1777 he bought 40 Cheviot rams of the best sort he could find on the Duke of Buccleuch’s or Sir James Johnstone’s farms in Eskdale, and put them to 1612 ewes of the short or blackfaced breeds. His farms then were Mack-

maw and Waterhead on the Annandale estates, near Moffat. When his neighbours and kindred saw him trying this new breed, they were very hard upon him, so he says, "for pretending to go out of the good old way; for changing the good hardy for the soft long sheep," and so forth. Being young and without much experience his courage failed him; so he purchased next year "short" rams and got "free" of his sheep of the "long" sort as quickly as he could. Had he "kept close" by the whitefaced breed during the remaining eight years of his occupancy of the above-named farms, he calculated he would have gained £500 more than he did by the "short" sheep.

Experiments by Mr David Irving.

He began experimenting again in 1785, when he put 134 Cheviot ewe lambs on to Black Eskhead, in Eskdalemuir. The success that attended this experiment, and the high prices of "long" sheep and fine wool, determined him "to try them in full," as he has it, on that farm. Accordingly, Cheviot rams were bought, and first and last 220 ewe lambs and 78 gimmers of that breed were added. "By these means," he says, "and by crossing my 'short' ewes with 'long' rams, I have so far improved the stock on that farm that my ewes and lambs sell 1s. higher than 'short' ones from such pasture, and the wool which could only have fetched £22, 15s. from the old flock sold this year for £48, 19s."

His most daring experiment was made when in 1787 he took the farm of Polmoodie, on the Annandale estate, and his report thereon is as follows:—

"Polmoodie is certainly one of the highest-lying farms in Scotland. It lies at the head of Moffat water, and marches with the estates of Lord Napier and Mr Williamson of Cardrona, in the parish of Ettrick; with Chapelhope at the head of Yarrow, belonging to Mr Hay of Drummelzier; with Winterhope, belonging to the Duke of Queensberry; with Nether Mingan, belonging to the Lord Chief Baron; with Cariferan, belonging to the Marquis of Annandale; and Bodsbeck, belonging to Mr Pulteney. I took it with a full and determined resolution to put 'long' sheep upon it. The stock belonging to the late farmer had been mostly sold, and it was judged a very dangerous project by the most experienced store-masters (sheep-farmers) in the country to stock such a farm with sheep that had not been bred upon it. But when I told them I meant not only to stock it with strangers but with a quite different breed, my future ruin was considered as inevitable; nor did my brother farmers put a single 'if' to their prognostications. But my circumstances being independent, I was resolved to give the

plan which I thought most to my advantage a fair trial. The following account will explain the manner in which I set out, and the steps by which I proceeded:—

“1787. Bought 1410 ‘short’ sheep, whose wool at 5s. per stone amounted to £51, 10s.

Of these I crossed 1079 ewes and gimmers with white-faced Cheviot rams bought in Eskdale and the neighbourhood of Jedburgh.

1788. Clipped 1540 ‘short’ sheep at 9½d. each	£62	6	6
„ Clipped 170 ‘long’ dinmonts at 1s. 7d. each	16	13	0

£78 19 6

1789. Clipped 505 ewe and wedder hoggs, ‘half-long,’ at 1s. 7d. each	£40	17	0
„ Clipped 860 ‘short’ sheep at 1s. 0½d. each	44	8	0

£85 5 0

1790. Clipped 1031 ‘half-long’ sheep, different ages, at 1s. 6½d.	£80	10	0
„ Clipped 800 ‘short’ sheep at 10¼d.	34	17	0

£115 7 0

“Thus I have brought the value of the wool produced on this farm from £51, 10s. to £115, 7s., at the same time sold my wool, only at the rate of from 9s. to 10s. per stone, whereas many of the farmers in the neighbourhood of the Cheviot hills, who have had time to bring their experiments to perfection, have already brought their wool to be worth 18s., 19s., 20s., and even a guinea per stone. The carcase I have brought to such perfection that, as markets go, it will not be easy to add above a few pence to its value; at the same time, with equal weight the butcher can always afford to give from 9d. to 1s. more for the Cheviot breed on account of the better quality of the skin.

“I have no doubt that all the sheep-farmers in Scotland will find it greatly to their advantage to adopt this breed. It will double the value of their wool by a single cross, and if it can be brought to a guinea a stone, the value of wool throughout the greater part of Scotland will be quadrupled. But in order to make the breed more valuable, it will be necessary to remove the prejudices both of the farmers in the Highlands, who purchase the young, and of the farmers in England, who purchase the older sheep, who have not been accustomed to put this breed on their high grounds, though there is every reason to believe that they would be found equally hardy and much more profitable.”

Mr Irving concludes this interesting report by expressing the

hope that his experiment, and others then going forward, will be of the greatest advantage to the manufacturers of the country, and of the commonwealth in general.

Rapid Advance of the Cheviots.

The experiences at Polmoodie have been recorded at considerable length, because it is believed they were typical of what was going on all over the hilly district of the south, about the end of the eighteenth century; and before the nineteenth had run half its course the blackfaces disappeared from nearly all the best farms in the south of Scotland, except in the higher districts of Ayrshire and Lanarkshire. In 1812 Dr Singer reported, in writing of Dumfriesshire: "All Eskdale is under Cheviot stocks, and also by far the most part of Annandale up to the marches of the county, including the vales of Evan and Moffat. They are not so numerous in the upper part of Nithsdale, where the 'short' sheep still prevail. . . . The Cheviot sheep has been gradually and very judiciously introduced by crossing the black ewes with Cheviot rams,¹ and late experience in the highest part of Nithsdale has proved that in such a situation that is the only safe mode yet known." "At present," he adds, "rams from the Hawick Fair are purchased by Cheviot farmers, with a view to improve the character of their stock." Dr Singer gives an instance of an exchange of stock which was negotiated, Cheviots from a farm in Eskdale going to a farm in Annandale, the stock of which was removed to the farm in Eskdale. The farms and stocks were naturally healthy, but the deaths which followed were "astonishingly severe."

To Caithness, in the north, the first Cheviots were taken by Sir John Sinclair in 1792, as has been already mentioned, when he consigned from the Cheviot hills 500 sheep to the farm of Langwell—a farm well known in later years for the Show Cheviots bred by Mr Donald Horne. In the years following their first introduction to the Highlands their numbers there increased rapidly. Throughout the two most northerly counties they were very soon almost everywhere to be found, and in Ross-shire, Argyllshire, Inverness-shire, and Perthshire a very large proportion of the sheep population was whitefaced.

In Douglas's 'Roxburgh and Selkirk,' at a later date, we get a view of the difficulties that had still to be overcome by those who attempted to improve their stocks by displacing, especially in Selkirk, the Forest breed by the Cheviot. "The change," he says, "was generally effected by using Cheviot tups for a

¹ It is impossible to say to what extent this practice prevailed, but obviously it must have had some effect on the breed as it now exists.

succession of years till all traces of the coarse wool, short bodies, black faces and legs, disappeared." "This plan," he said, "was exceedingly 'plausible in theory.'" There was every reason to expect that some of the good points of the mothers might be retained, and their chief defects corrected. "But the event is a striking proof that the most specious theoretical reasoning may be delusive. The present whitefaced flocks in Selkirkshire do indeed possess much of the hardiness of the race from which they spring on the female side, and their wool is considerably improved. But still, even in wool, and much more in shape and size, they are greatly inferior to true Cheviot sheep." Thus the worthy minister of Galashiels puts on record the experience of the Selkirkshire breeders of one hundred years ago. It is on all-fours with the experience of practically all breeders who have as yet attempted to alter and improve characteristics of stock which have endured for long years. While much has been done, and while much may still be done, disappointments and disillusionments are the common lot of all. "The best laid schemes . . . gang aft agley."

The Cheviot Sheep of the latter half of the Eighteenth and beginning of Nineteenth Century described.

Of the white sheep of the early days we have no description, and any attempt to portray his features or characteristics would be only an effort of imagination. When, however, we come to the middle of the eighteenth century we find a sheep which was said to have good qualities and bad qualities. Although the descriptions of him which have survived are neither exhaustive nor consistent, apparently the Cheviot sheep of that day were long-shaped and narrow along the back, with forequarters light in proportion to the hindquarters. While they had some superior wool, the fleece was not consistent throughout, and the total weight of wool produced was not great. It was to effect an improvement among such sheep that the rams from Lincolnshire were introduced, and the experiment apparently was successful.

There has been given elsewhere Sir John Sinclair's account of the Cheviot of the last decade of the eighteenth century, and the description given by Brown, in his treatise on 'Rural Affairs,' of the Cheviot sheep of about the year 1811, is as follows: "Head polled, bare and clean, with jawbones of good length; ears not too short; countenance of not too dark a colour; neck full, round, and not too long, well covered with wool, and without any beard or coarse wool beneath. Shoulders deep, full, and wide-set above; chest full and open; chine (back) not too long, straight, broad, and wide across the fillets; hams round and plump; rump short and bushy; body in general

round and full, and not too deep or flat in the ribs or flank; legs clean, of a proportionable length, and well clad with wool to the knee-joints and houghs; fleece fine, soft, close, and thick-set, of a medium length of pile, without hairs at the bottom, nor curled on the shoulder, and with as little coarse wool as possible on the hips, tail, and belly. A sheep possessing these properties in an eminent degree may be considered as the most perfect model of the Cheviot breed."

That there were specimens of the breed such as Mr Brown describes may not be doubted, but the pictures (Figs. 28, 29, and 30) that have been preserved of the animals of that period scarcely leave the impression on the eye that the foregoing leaves on the mind.

Although few chroniclers record the circumstance, Ryeland or Hereford rams were at one time used for grading up the Cheviot. These crosses affected both the frame of the sheep and the wool, and the character and reputation of the sheep of the Cheviot hills rapidly spread over great parts of Scotland.

Cheviots become Big and Soft.

All seemed to go merrily and well so long as prices were good and seasons not too bad, but a time of severe trial came, when the reputation of the breed received a sad blow. The breeders, notably Mr Brydon of Moodlaw and Kinnelhead, either by introducing, as some think, some Leicester blood, or as seems more probable, by selection in breeding and high feeding, produced gradually a sheep with great style and big size, with Roman nose and long sides. (Figs. 34 and 35.) Such sheep needed plenty of food. Their skins become open, and as mothers they were much more prolific than milky. The result was, that when, in the early seventies, prices of sheep, and especially of wool, fell, farmers began to question if the Cheviot after all was so much better than the blackface. When, in addition, a few shocking bad seasons came in quick succession, and on some hirsels there were not enough ewe lambs produced to maintain the stock of the farm, a strong reaction in favour of what was at that time undoubtedly the hardier breed set in. The stock on many farms was changed, and it is an interesting fact that Kinnelhead, Appin, and The Holm of Dalquhairn—farms famous for their Cheviot stocks when tenanted by the Messrs Brydon—are all carrying Black-faces now, and more than maintaining their reputations as well-doing farms. But the faith of some Cheviot breeders at any rate did not die out, and the Messrs Elliot, the Messrs Robson, Mr Johnston of Archbank, and others, set themselves to meet the changed circumstances and changed views. Very soon

smaller, closer-coated, and comparatively fine-boned sheep made their appearance, and while the weight of carcase was sacrificed, there were more lambs to sell on an average season. (Figs. 36 and 37.) The ewes milked better,—being able to maintain themselves on less food in a barren spring than the big, long-sided sheep of the previous years. Such, then, was the Cheviot sheep of the end of the nineteenth century; but since the twentieth century opened the popular taste has begun to run once more in favour of bigger sheep. (Figs. 38 and 39.) Breeders, however, have not forgotten the lesson taught our fathers thirty years ago, and while they are trying to increase the weight of carcase and strengthen the bone, they are mindful of the skin and general “cliftiness” of character. So far no evil results have come about, and Cheviots stand in as high favour to-day as at any time during the history of the breed.

Highland v. Border Types of Cheviots.

A considerable difference in type has emerged between the Caithness and Sutherland Cheviot and the Cheviot of the Border country. The north country farmers do not stock heavily, and their sheep, if parts of the grazings are poor, have at all events plenty of room. The farms along the north coast have proved exceedingly well suited to the breed, and the climate, influenced by the Gulf-stream, has been favourable. However it has come about, the North sheep have attained a great size, combined with a fine quality of wool. Generally speaking, they have not the smart, stylish appearance of the sheep of the South, but, for taking to good heavy land for crossing purposes, ewes from Sutherland and Caithness are preferred to those from any other quarter. During the past two seasons there has been an attempt made by one or two breeders to draw the North and the South closer in sheep breeding. For many years the Northmen took an occasional tup from the South, but it was only in 1912 that the Highland sheep invaded the lowlands. The favourable reception accorded Crackaig sheep that year, and the Dalchorch sheep in 1913, at Hawick, will undoubtedly encourage their owners to repeat the experiment of selling at least a part of their rams in the Southern market.

The Modern Cheviot.

The up-to-date, modern Cheviot ram is described in vol. i. of the ‘Flock-book of the Breed,’ and as this may be considered the official description, it may be well to put it, in part at least, on record here. The Cheviot ram, it is said, should have a lively carriage, bright eyes, and plenty of action. His head, of medium

length and broad between the eyes, should be well covered with short, fine, white hair. His ears, not too long nor too near each other, should rise erect from the head, and, like the head, should be well haired; his nose and nostrils should be black, full, and wide open; his neck should be strong and not too lengthy; his breast broad, and his legs set apart. His ribs must be well sprung, and a long weak back is about the worst fault a Cheviot can have. The back must be broad and well covered with mutton, the hindquarter full, straight, and square; the tail well hung and nicely fringed with wool. His hocks must stand squarely from the body,—hocks pointed in being a decided weakness. The bones of his legs should be strong, broad, and flat, and all covered with short, hard, white hair. He should grow a fleece of moderately-long and fairly-fine white wool, densely planted, of equal quality, and covering the whole body, above and below, and well down to the knees and hocks. A break in the wool at the cheeks or throat or behind the ears is seriously objected to, and bareness of the breast or belly is a decided blemish. A Cheviot ram at maturity will weigh 200 lb. live-weight, and will clip 8 to 10 lb. of wool. A cast ewe when fed will provide 15 to 18 lb. per quarter, and a wedder, with ordinary treatment, 18 to 20 lb.

The Numbers of Cheviot Sheep and their Distribution.

Mr James King of Messrs R. & A. Campbell, wool-brokers, Glasgow, has favoured me with an estimate of the number of Cheviot sheep in Great Britain. He thinks there will be about 1,150,000, of which 150,000 are in Northumberland. It is impossible to calculate the numbers with accuracy. Any estimate must necessarily be speculative, although Mr King, more than most, has opportunities to form a reliable opinion. Probably from the beginning of the nineteenth century till 1870 the breed increased in Scotland—at first rapidly, latterly more slowly; but from about 1880, or perhaps a few years earlier, the numbers decreased, many farmers changing Cheviots for Blackfaces. The arguments for this course were that the Blackfaces were hardier than the Cheviots, and more of them could be kept on the same land, and that owing to the fall in the price of Cheviot wool Blackfaces were not likely to be much less profitable than Cheviots. Besides, as the blackfaced sheep were in demand for crossing purposes, the ewe lambs which could be spared for sale always commanded a ready market at remunerative prices. Now the tendency to change has been checked, and there are not wanting signs that an opposite movement has begun. Some say this is because all the land suitable for Blackfaces has been

stocked with them; others say the change to Blackfaces has not proved so profitable as was expected. In this connection there is one curious fact for which it is difficult to account. For the first few years after the change was made the blackfaced ewes were exceedingly prolific, whether mated with a long-woolled ram or with one of their own breed. This secured a handsome return to the flockmaster. In the course of a year or two twins gradually became scarcer, and it was soon evident that the golden age for the farmer had not yet arrived. Cheviot wool has in some considerable measure recovered its former price. Cheviot ewes are in strong demand, both in the arable districts of Scotland and in great parts of England, for raising half-bred lambs, and what ewe lambs can be sold are much more easily disposed of now than a few years ago. In the face of these altered and much improved conditions it is probable that not a few who have changed would be glad to have the whitefaces back again to their old haunts. At present Cheviots are mostly bred in Roxburgh, Dumfries, the eastern part of Kirkcudbright, Peebles, Selkirk, Sutherland, Caithness, and Northumberland. In addition, there are considerable numbers in Argyll, Lanark, Ross, and Inverness-shire, on the Lammermoor hills, and in the Island of Skye.

The Cheviot Abroad.

Cheviot sheep have found their way into many lands. Of late years both males and females have been sent from Scotland to South Africa, New Zealand, the Falkland Islands, the Argentine, Norway, and Sweden, and in almost every case they have given a good account of themselves. It is many years since the breed was first tried in Canada and the United States, Mr Pope, of Quebec, having introduced it about 1825 to Canada, and Mr Young, of Delaware Co., in 1838 to the U.S.A. Although a considerable number of farmers in the States have a few Cheviots, there are no flocks of any great size.

The Cheviot as a Mutton Sheep.

At home the Cheviot is, at present, coming more and more into favour with the feeder. Mr M'Dowall of Girstingwood, Mr Clark, Dundas Castle, and others have exhibited prime specimens at the Scottish National and Smithfield Fat Stock Shows, and on more than one occasion Cheviots have come well forward in the championship competitions. Mr MacLaren, Dalmeny, has favoured me with the following particulars which speak for themselves, and show what Cheviot wethers can do when they get a chance. At the September Sale in Dingwall,

1912, Gordonbush wether lambs were bought at 20s. They were wintered at Rosebery, and taken to the policy parks at Dalmeny in April 1913. They clipped, on the average, $4\frac{1}{2}$ lb. of washed wool, which was sold at 1s. 3d. per lb. One hundred of the hogs were sold before the end of October at 53s. each, and another hundred were sold in first week of November at 52s. Lord Rosebery has also bred some lambs this season (1913) from Shinness ewes, by a ram from Mr John Robson. A pen of five of these were sold by auction in Edinburgh, at $7\frac{1}{2}$ months old, yielding 76 lb. of mutton, for 57s. each. Mr MacLaren says these lambs were specially fed for the purpose of finding out what could be done in a given time. He has undoubtedly found out something worth discovering. Even in the early days experiments were tried—so far back as in 1803-4 a record was kept (Henderson's 'Practical Agriculture')—of the weight to which Cheviot sheep could be fed. A few lambs were selected and kept till they were eighteen months old. At that age half of them were killed, to scale 80-86 lb. The remainder were fed for another year and killed, at thirty months, to weigh 100-112 lb. Had the lesson been needed, the Dalmeny experiment shows the advantage of early maturity.

Successes at Smithfield.

In the carcase competitions at Smithfield this year (1913) Cheviot sheep had conspicuous success. In the class for "One pure, long-woolled wether sheep above 12, and not exceeding 24 months old," there were 16 entries—12 Cheviot, 3 Welsh, and 1 blackface. So good was this class as a whole, that while the 1st, 2nd, and 3rd prizes were awarded to Cheviot carcases, every exhibit in this class received a commended ticket—a totally unprecedented thing at Smithfield.

Cheviot Wool.

On a hill-farm the grazier depends greatly on the return he gets for his wool, and a flockmaster's year is often successful, or the reverse, according to the prices current. A ewe flock in average condition should clip approximately 4 lb. of wool each, and the hogs, if well wintered, slightly more. In the last ninety-five years a careful record has been kept of the prices got for both wool and sheep, and these will be found in another part of this volume. The lowest recorded prices for Cheviot wool were paid in 1901 and 1902, when unwashed clips sold at from $4\frac{1}{2}$ d. to 5d. per lb., and washed from $5\frac{1}{2}$ d. to $8\frac{1}{2}$ d., according to quality. On the other hand, in 1872 prices reached a figure which in these days seems past

hoping for—viz., from 1s. 1d. to 1s. 6½d. per lb. for laid and unwashed wool, and from 1s. 8d. to 2s. per lb. for washed samples. Since 1902 prices have considerably recovered, and this season (1913), 11½d. per lb. or 23s. per stone was quite commonly paid for unwashed south-country clips. For superior Border washed clips, and wool from Sutherlandshire, as much as 28s. to 30s. per stone of 24 lb. could be obtained.

Prices of Sheep and Lambs.

The prices that have been paid for Cheviot ewes and lambs during the last hundred years have varied very greatly. About 1823, for example, ewes were quoted at from 7s. to 9s., and lambs 4s. 6d. to 6s., whereas in 1883 the figures given are—for ewes 34s. 6d. to 46s. 6d., and for lambs 15s. 6d. to 23s. Much depends on the "character" a stock has, and there are commonly great variations in the quality and reputation of stocks, even on adjoining farms. The fluctuations in price of ewes and lambs is exemplified in the following table, which gives the figures for which the cast ewes and wedder lambs of a Galloway farm were sold during the last fourteen years. When the ewes were sold by auction in "cuts" the highest price touched is given.

Ewes.				Lambs.			
		s.	d.			s.	d.
1900 .	.	19	6	9	9	1907 :	.
1901 .	.	21	6	11	0	1908 .	.
1902 .	.	25	0	12	6	1909 .	.
1903 .	.	29	6	13	6	1910 .	.
1904 .	.	30	0	14	0	1911 .	.
1905 .	.	34	9	15	0	1912 .	.
1906 .	.	36	3	17	0	1913 .	.
						32	0
						26	0
						21	0
						24	9
						23	0
						26	6
						37	3
						15	0
						13	0
						10	6
						14	0
						13	0
						15	6
						17	6

Sheep Stock Valuation.

When an occupier of a sheep-farm gives up the tenancy, or as it is often expressed, when a farm "changes hands," it is customary for the incoming tenant to purchase the sheep on the farm from the man who is "going out." In the case of many farms, both in the north of Scotland and in the south, the sheep are "bound to the ground"—that is, the landlord in letting the farm binds and obliges the tenant who is going in to purchase at his entry, and sell when his outgoing comes, his whole sheep stock at valuation. The valuation is conducted by three farmers or live-stock salesmen. One is named by the buyer, another by the seller, and these two select the third, who is the oversman, and who is only called on to give an opinion in the event of the other two failing to agree on the

price. There is no doubt that, for many reasons, it is of great advantage for the incoming tenant to get the sheep that have been bred on the farm; and, on the other hand, if Whitsunday (28th May) is to be the date at which farms change hands, the seller must get his successor to take over his sheep, as there is no possible outside market for them at that season; and, besides, the lambs are too young to be driven away except at the risk of great damage and loss. While most will admit that the custom of selling and buying the stock at valuation is of mutual benefit to the two parties concerned, there has arisen in practice an inflated and almost artificial value, which is very generally applied by valuers throughout the country. In arriving at the figure at which the ewes and lambs are to be sold and bought, the cast ewes are assumed to be worth so much, the wedder and second ewe lambs worth so much, and the wool per sheep so much. To the sum which results from the addition of these three figures there is added what is thought to be the additional value of the young ages of ewes and the top ewe lambs which are kept for stock. Beyond all these there falls also to be added a certain sum for "acclimatisation"—that is, a sum which is supposed to represent the value of sheep bred on the ground, beyond the value of similar sheep, bred elsewhere, which would have to be procured to stock the farm were its proper sheep driven off. It is in assessing this value that the alleged abuses have crept in. So keenly, indeed, have some proprietors felt on this matter, that they have made strenuous endeavours to get rid of the obligation that falls on them, either to take over or bind incoming tenants, as representing them, to take over the outgoing tenants' sheep. The whole question has been the subject of protracted litigation, in which the name of the late Colonel Williamson of Lawers has been prominent. A particularly hard case, which has gone to the highest courts, was caused by an "heir of entail" of an estate refusing to implement a contract made by his predecessor in possession to take over a stock. The law as at present interpreted sustains the contention of the "heir of entail," but the outgoing tenant apparently can compel the "heir at law" to take his sheep. If the estimated value of the cast ewe be x , of the wedder and second ewe lambs y , and the fleece z , the value so far may be represented as $x+y+z$. To this is added, in respect of the young ages and the "acclimatisation," anything, according to locality and the fancy of the valuer, from 10s. to 25s. per sheep. Valuation figures are highest in the north, where stocks are valuable in themselves, and where it would be very difficult to replace them. In Sutherlandshire, for example, Scibberscross ewes and lambs changed hands at £70 per 21, and Balnakiel ewes and lambs at £68, 10s. per

21, in 1908. In the West Highlands figures are also high, owing mainly to the great death-rate among any sheep taken to farms on which they have not been bred and reared. In the south of Scotland, on the other hand, valuations are said to be moderate—10s. to 14s., or sometimes rather more, being added for the young ages and acclimatisation. The record price in the south, so far as noted, was paid for Nether Cassock stock in 1890. The ewes and lambs were valued at 69s. each, and the hogs at 45s. The farm to which the table of prices given above relates changed tenants in 1901. The old ewes that season sold at 21s. 6d., the wedder lambs at 11s., the wool at 1s. 6d. per sheep—21s. 6d. + 11s. + 1s. 6d. = 34s. The valuation price paid was 51s.

Whitsunday is almost universal as the term of outgoing from, and the entry to, sheep farms. For many reasons Martinmas would be better. At any rate, the autumn sales, which had recently taken place, would afford reliable data, which could not be ignored in fixing the first three items that go to make the valuation price.

Systems of Management.

Perhaps some attempt should be made to describe the management of a Cheviot farm, or a stock of Cheviot sheep. Flock-masters have each their own peculiar views and practice, but, in the main, a general line is followed in the various districts of the country where the breed abounds. Space would not permit of this part of our subject being treated historically, but a writer in 1778 (Wight) has put on record what he saw at Clifton and Belford, and as Mr Pringle and Mr James Robson were undoubtedly noted pioneers in the arts and mysteries of sheep-breeding, it may be well to quote a few sentences. After telling about Mr Pringle's management of his cattle, it is said, "Mr Pringle prefers what are called the 'Border sheep' (evidently a name by which 'Cheviots' of that day (1778) were known). They are close-woolled and long in the body. He rejects Mr Bakewell's kind, which are too heavy and too short in the leg to travel over hills or through snow. The ewes weigh from 12 to 14 lb. per quarter when fat. His hogs are always smeared; one pint of tar and four pints of butter to sixty hogs. The old sheep are only smeared when they go upon high, cold, wet ground." Mr Pringle uses more tar than is common in this country, but he thinks this necessary in wet and high grounds exposed to storms during winter. The gimmers and dinmonts are sent to the highest and coldest grounds, the ewes are kept on the lowest. The best lambs sell from 7s. to 8s., and the remainder at 4s. or 4s. 6d. Young wedders give 15s. before the

fleece is cut, cast ewes from 12s. to 12s. 6d. Mr Pringle approves greatly of keeping his sheep with 'clothing' and 'combing' wool separate, and of improving the breed of each by good rams of their own kind. He holds the former to be the most hardy and the best adapted for cold and wet grounds, and yet that the combing kind will stand cold in good pasture."

Mr Robson's Management.

"The farm of Belford, leased by Mr James Robson, makes a part of the ridge of Cheviot, and is high, rough, coarse and cold ground. The house and offices are remarkably good, and great was my surprise to find so neat and clean a habitation in the midst of mountains. Beside Belford, Mr Robson is in possession of several other store farms, for which he pays about one thousand pounds sterling yearly; and he is well qualified for his business, as there is perhaps not another person in the world more thoroughly skilled in breeding and managing sheep. By great industry, and by frequently crossing the breed, he has at last perfected his flock to his wish, with respect not only to shape and wool, but chiefly with respect to hardiness. After having improved his flock to the utmost, he is equally careful to preserve it in its perfect state. He finds new importations of the best rams necessary every fourth or fifth year for keeping up the breed.

"The rules Mr Robson gives for a proper choice are, that the size be rather under the staple of the pasture, and the pasture rather above the quantity; that the rams shall be straight-backed, high-shouldered, round in the body, and equally weighty in the hind and fore quarters; that the wool be close, broad at top without dividing, fine and free from any mixture of hair. He avoids the dull spiritless kind that have wool to the eyes, for they are generally tender. He rejects such as have very short legs and deep wool, because they cannot endure fatigue on mountainous ground. He prefers a smooth head and short neck. He makes a distinction between sheep that bear the short clothing wool and the sheep that bear the combing wool, and never blends one with the other.

"In smearing, Mr Robson is regulated by the pasture. Where the ground is wet, more tar than when dry (*sic*).

"In the former, one pint tar and five English pounds of butter smear twenty sheep. In the latter, one pint tar and ten pounds butter smear forty sheep. Mr Robson is clear that by such smearing the wool is increased in quantity and perhaps also in quality. He disapproves of oil and tallow in the salve, which prevent the wool from taking on a proper colour in dyeing."

The historian adds, "a breed of sheep so hardy and so well adapted to the coarsest and coldest pasture ought to be purchased at any price for stocking the mountains of Scotland." He apparently backed his opinion, for he "prevailed on Mr Robson to let him have one of his rams, and a few ewes, *at any price*, for breeding upon."

Since those early days systems of management have been modified. Smearing has ceased to be practised, and dipping twice each year is by law established.

The Hill Farmer's Year.

Tups are put to the ewes on 22nd November, and lambing commences on 17th April. Most hill-farms have a small supply of natural meadow-hay, which can be fed to the sheep in the event of a severe storm of frost or snow, but should the severe weather last more than a week or two outside supplies have to be brought to the sheep, or possibly the sheep may have to be taken to the supplies.

At lambing-time additional assistance is given to the shepherd, and lambing men of experience get high wages—as much as 35s. and 40s. per week for three or four weeks. A good man is quite cheap even at that money. A careless man is too dear at any wage, and if it can be avoided such an one should never be allowed among sheep. In former years the male lambs were castrated in May—24th to 28th. In recent times—at least in the south of Scotland—it has become customary to mark the lambs and clip the eild sheep and hogs on the same day, weather permitting—about 12th-17th of June. This saves two gatherings of the sheep, and the system works well. The ewes are shorn about first week of July, and the wool should be taken direct from the shears to the bag or sheet, and the sooner thereafter it is in the merchant's or broker's store the better. The first dipping of the season takes place early in August, and the lambs are weaned about third week of that month. The best ewe lambs, to the number of about a fourth of the ewes, are kept for stock. These should be separated from their mothers for eight or ten days, and then sent back to the hill. They will, in almost every case, find their dams, but as the milk-supply will by the end of ten days have failed, they will do their mothers no harm, but, on the other hand, they will benefit by having the company and following the habits of the older sheep.

The wedder lambs are sold to feeders. During many years there was a market for them to go to, high stormy farms where a breeding stock could not be kept to advantage, but the taste for 2- or 3-year-old mutton seems to have gone,

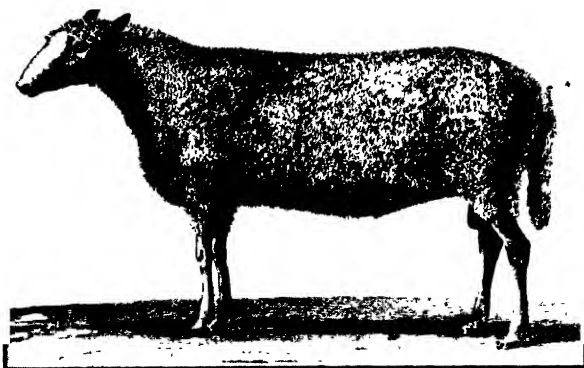


Fig. 28.—*Cheviot Sheep.*

Bailhe and Culley, Report on Agriculture of Northumberland, 1794.

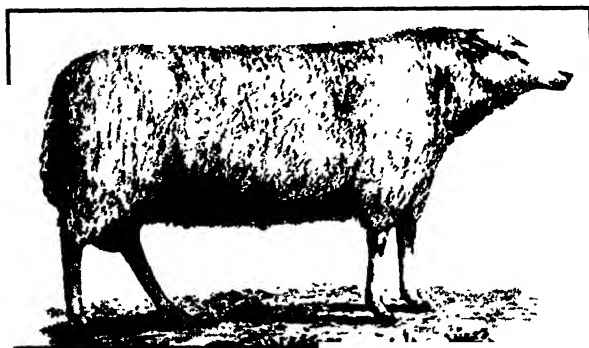


Fig. 29.—*White-faced Cheviot Tup, with some Leicester blood.*

Douglas's 'Roxburghshire' 1798.

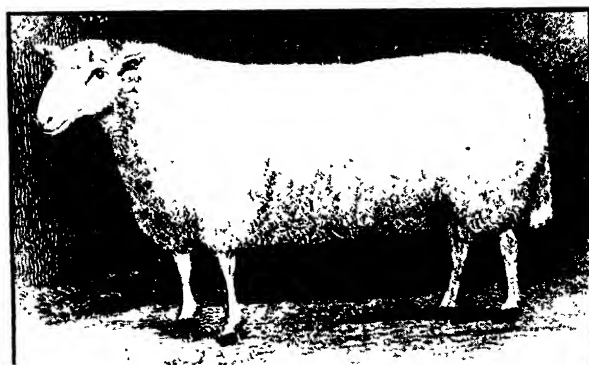


Fig. 30.—*Cheviot Ram.*

Potts, 'Farmers' Cyclopaedia,' 2nd Ed. 1868.



Fig. 31.—*Cheviot Ewe*.

Low's 'Domestic Animals.' 1840. Sheep bred by Mr Thomson, Attonburn, Roxburghshire.

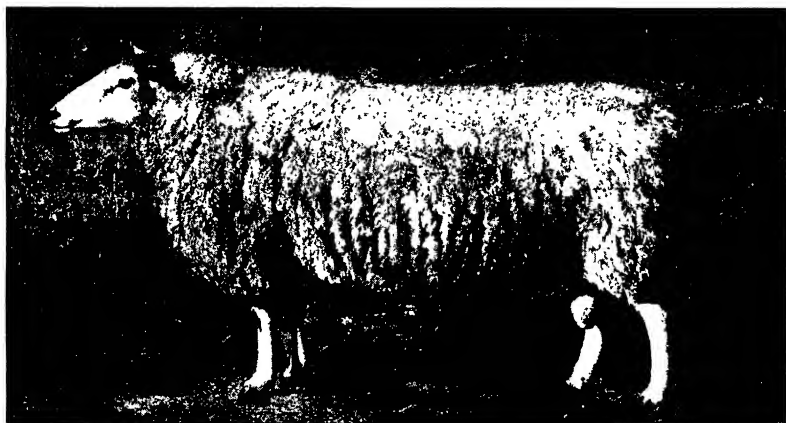


Fig. 32.—*Cheviot Tup*.

Bred by Messrs Young and Craig, Bighouse, Sutherland. From Painting in Office of Highland and Agricultural Society. This ram gained 1st prize in his class at Aberdeen, 1840. Portrait by Mr Goulay Steell, R.S.A.

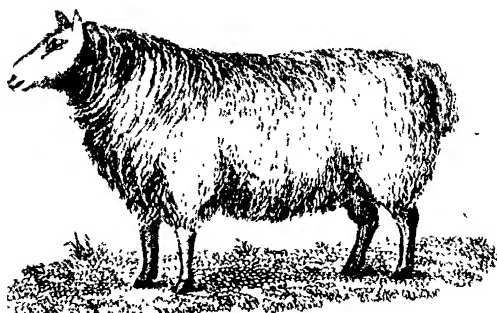


Fig. 33.—*Cheviot Ram*.

Blacklock's 'Treatise on Sheep.' "The portrait of a very superior animal in the possession of my friend Mr Laurie of Terreglestown. Premium was awarded to Mr Laurie for this sheep at the last meeting of the Highland Society in Dumfries, 1844."



Fig. 34.—*Ram.*

Bred and shown by the late Mr Moffat, Craick, about 1869.



Fig. 35.—*Cheviot Ram, "The Gentleman."*

Property of Mr Thomas Elliot, Hindhope. Winner of prizes in 1873 at Northumberland Show, Highland and Agricultural Society's Show at Stirling, Border Union Show, and Bellingham Show.



Fig. 36.—*Ram.*

Bred by Mr Moffat, Craick. Winner of five first and Champion Prizes, 1886-87.

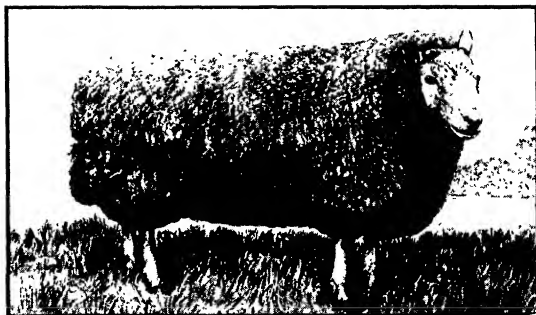


Fig. 37.—*Cheviot Ram.*

From Stephen's 'Book of the Farm,' 1887 Bred by Mr John Robson, Newton, Bellingham



Fig. 38.—*Cheviot Ram, "Battlefield."*

Bred in 1904 at Skelhill. Bought by Mr J. C. R. Smith of Mowhaugh in 1906. 3rd at Highland Show, and Champion at Northumberland in 1907. Bought by Mr Barber of Tererian; in his hands 1st at Dumfries and Thornhill in 1907, 1908, and 1909. Now in possession of Sir Edmund Laurie, Bart., of Maxwelltown, Dumfriesshire, and used in 1913 for his ninth season



Fig. 39.—*Cheviot Ram, "Parkhall Record."*

Bred by Messrs Dobson and Murray in 1911. 3rd at Highland Show at Cupar. Sold at Hawick, 1912, to Mr J. S. Dickson of Flemington for £125.

and almost all the wedder hirsels in the Highlands have been put under deer. Nowadays few Cheviot wedders survive 15 to 18 months, and many of them are killed in January and February when they are 9 or 10 months old. The principal sales for Cheviot wedder lambs are at Hawick, Annan, and Lockerbie, but considerable numbers are sold by "character" at the annual fair held at Inverness in July. The cast ewes are sold in late September or early October, and are bought in large numbers to go to England to be mated with Leicester or other long-woolled rams, for the production of half-bred lambs. Ewes are sold at 5 and 6 years old, but in the north, and also in some districts of the east border, they are marketed a year earlier. The principal sales for breeding ewes are Lockerbie, Perth, Hawick, Rothbury, Castle-Douglas, and Annan.

In many farms both north and south the stock lambs have to be sent away for their first winter—from 1st November to 1st April. Many go to Ayrshire, Ross-shire, Aberdeen, and Banff. This is a serious expense to the sheep-farmer, 8s. each in the south, and 9s. to 10s. in the north, being common rates for wintering.

Selection of Rams.

One of the most important duties of the sheep-farmer, which falls to be performed annually in September or October, is the selection of rams to be used during the coming season. Some there are who treat this as a light matter, and many animals only fit for the butcher are bought at the ram sales because of their low price—certainly for no good point they possess. Sooner or later, and sooner rather than later, this tells on the stock. Every careful flockmaster considers well what points or qualities he desires to see developed, *e.g.*, strength of bone, quality of wool, &c., and selects his rams accordingly; but care must be taken that in attaining one good point, another, perhaps equally valuable, is not lost. Most farmers rear a certain number of tup lambs for their own use, but in every case fresh blood should be, occasionally at least, introduced to the flock. Many sheep-farmers buy a good tup, and mate him with thirty to fifty, or even more, selected ewes. From the lambs thus bred they choose the tup lambs, and consequently all the young rams to be used in a future season are half-brothers. One great advantage of this custom is that a family likeness is developed in the flock. Many of the best-known farmers, however, in the world of Cheviots, make a trade of rearing and selling rams. The practice generally followed is to use the rams at home the first season, and sell them at one or other of the sales when they are two years old,

although the practice of selling one-year-old or dinmont tups is becoming more common every year. The principal sales are at Hawick and Lockerbie, although a considerable number are also sold at Edinburgh and Dingwall. Mr Brydon, Kinnelhead, and Mr Borthwick, Hopsrigg, Eskdalemuir, were probably the earliest to develop the tup trade, and they had sales in alternate seasons at Beattock and Lockerbie, Dumfriesshire. For many years past, however, all the crack lots have been sold at Hawick by the Messrs Oliver.

Tup breeders devote the greatest care to their work, and a high excellence has been attained by many specimens of the breed. From the time they are weaned the ram lambs get every attention and the best feeding obtainable. The following season—that is, when they are shearlings—they are only allowed a short time—seventeen to twenty days—with the ewes, and then carefully fed till the following autumn, when they are sold. For some weeks before the sale at which they are to be exposed, they are kept perfectly dry—that is, they are put into a house or shed at night and on wet days. In order to get the best appearance, the rams are, generally speaking, highly fed, and a considerable prejudice exists in many quarters against them, both on that account and because of the quantity of wool they are carrying; but when an unfed or barely-clipped ram appears in the sale-ring, only a very few will bid for him. In the work of shaping and dressing, and generally preparing sheep for show or sale, many shepherds have become adepts.

A SHEPHERD'S CALENDAR (a Hill Farm).

Nov. 22. Put rams to ewes.

Jan. 1. Take in rams from hill.

Feb. 1. Draw in any weak and failing ewes.

Mar. 1. Again take in, for special treatment, any thin or lean ewes.

April 1. Get hogs home from wintering, and dip them before putting to the hill.

April 17. Lambing commences.

May 28. Lambing completed.

June 12-19. Castrate and mark lambs and clip hogs and eild sheep.

July 3-10. Shear milk ewes.

Aug. 1-3. First dipping.

Aug. 20-23. Wean lambs for market, &c.

Sept. 20-Oct. 1. Draw off cast ewes for market.

Oct. 10. Second dipping.

Nov. 1. Send off hogs that have to be wintered from home.

Men of Mark among the Cheviots.

In thinking of those who have assisted in the development of the Cheviot breed, the names of Johnston of Archbank,

Grieve of Skelfhill, Welsh of Ericstane, Aitchison of Linhope, Moffat of Craick, and others at once rise in our memories. But of all the supporters of the breed it owes probably most to Sir John Sinclair in the early days as a patron, and to Robson of Belford as a breeder, "who, it is stated, in his day sold more tups than one-half of hill-farmers put together" ("Northumberland Farmer" in 'Farmers' Magazine,' 1803). In more recent years, Brydon of Kinnelhead and Elliot of Hindhope were undoubtedly the chiefs. Mr Brydon bred a type of sheep which had some excellent qualities, and for many years was exceedingly popular all over Scotland,—so much so, indeed, that it is questionable if there was a Cheviot stock in the country which had not more or less of "Brydon blood" in it. From 1851 till 1877 he held biennial sales of rams at Beattock, and a glance at the annexed table will show what splendid prices, and especially what great averages (considering the numbers exposed), he got. Fourteen guineas each in 1865 for 169 sheep will be a record so long as there are sheep to sell.

KINNELHEAD RAM SALES, BEATTOCK.

Year.	Sold.	Average.			Highest.											
		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1851	128	8	15	7	19	0	0	31	0	0	37	0	0	24	0	0
1853	129	12	13	6	54	12	0	51	0	0	21	0	0	75	0	0
1855	184	8	10	8	99	15	0	73	0	0	45	0	0	32	0	0
1857	171	10	2	3	39	0	0	51	0	0	50	0	0	33	10	0
1859	171	7	17	2	60	0	0	30	0	0	52	0	0	46	0	0
1861	161	9	1	11½	55	0	0	30	9	0	43	1	0	34	13	0
1863	167	9	6	2½	63	0	0	36	0	0	45	0	0	41	0	0
1865	169	14	14	0	115	0	0	155	0	0	121	0	0	85	0	0
1867	174	8	11	5	194	5	0	75	0	0	58	16	0	65	2	0
1869	139	11	0	10	43	0	0	51	0	0	145	0	0	52	10	0
1871	159	10	10	9	37	0	0	80	0	0	50	0	0	42	0	0
1873	123	10	19	4½	90	0	0	52	10	0	50	0	0	41	0	0
1875	128	7	0	7½	30	0	0	50	0	0	30	0	0	30	0	0
1877	91	7	4	2	55	0	0	42	0	0	39	0	0	30	0	0

Hindhope.

Of only less influence in the pastoral world, even in those days, was Mr Thos. Elliot of Hindhope, who laid the foundations of the name and fame which have attended Hindhope Cheviots for wellnigh fifty years.

Hawick Sales of Rams.

The Hindhope tups have long been sold annually at Hawick, and have invariably taken a prominent, if not always the leading, place in the sale. In these last seasons several other and younger flocks have come well to the front, notably those of Mr John Robson of Newton and Mr Jacob Robson of Byrness, two of the most enthusiastic Cheviot breeders of the day. No exhaustive list can be attempted of the men who are doing the breed good service at the present time. Mr Smith, Mowhaugh; Mr Elliot, Meigle; Mr Joshua Murray, whose many successes in the sale and show rings are universally popular, and who holds the record as the breeder of the ram which has made the highest price yet paid in Hawick; and Mr M'Kerrow, Boreland, Kirkcudbrightshire, are well known to all in the south. Mr Innes, Sandside; Mr Campbell, Shinness; Mr Dudgeon, Crackaig; Messrs Mundell, Dalchorch; Mr Cameron, Gesto, Skye; and the Messrs Robertson, are worthy representatives of Highland sheep-farmers. In the central districts of Scotland, Mr Smith, Leaston; Mr Hogg, Newlands; and Mr Jeffray, Deuchrie, are well-known enthusiasts.

The following table gives a few of the best prices and averages got for rams at Hawick:—

Year.	Flock.	Highest price.		Average.		
		£		£	s.	d.
1903 . . .	Attonburn	115		18	0	11
1904 . . .	Hindhope	120		19	18	7
1906 . . .	Hindhope	100		23	18	8
1907 . . .	Hindhope	90		24	6	4
1908 . . .	Hindhope	100		22	4	11
1910 . . .	Riccalton	74		20	15	8
1912 . . .	Parkhall	125		30	10	0

Mr Robson of Byrness has put in my hand a catalogue of the Highland Show held at Dumfries in 1845. From the list of exhibits then given we learn that Mr Aitchison of Menzion travelled his tups forty miles by road to the show, Mr Brydon, Moodlaw, twenty-six, and Mr Robson, East Keilder, near Bellingham, no less than forty-five miles. With all the improvements which we believe to have been brought about in the last sixty years in the Cheviot breed, we wonder what appearance our *modern* twentieth-century show tup would make if he had been "travelled" forty or forty-five miles to the yard.

A well-known writer (Low) claims that the Cheviot sheep are of quiet habits, possessing the independence of the mountain race, but having none of the indocility which distinguishes other races. This is a feature of the breed which is specially

valuable, and enables the sheep to adapt themselves quickly to the district or country to which they may be moved. They respond readily to the circumstances of their new surroundings, and the changed conditions are reflected very rapidly, especially in the character of the wool.

For very many reasons the Cheviot sheep are coming more and more into favour, and with so many valuable characteristics to commend them, it will not be surprising if their past and present popularity is as nothing compared to that which is in store for them.

In preparing this paper the writer has drawn to a considerable extent on an article he wrote for the 'Standard Encyclopædia of Modern Agriculture.' This he has done without the use of quotation marks, and he acknowledges the kind permission of the Gresham Publishing Company to do so. In addition to many whose names are mentioned in the text, he has to express his obligation for assistance to Mr Carruthers of Stenrieshill; to Mr Jas. Kissock, Irongray, Dumfries; to Mr A. R. Oliver, Hawick; to Mr Robertson, Morebattle Tofts; to the late Mr Oliphant Smeaton, F.S.A.; and to Dr J. P. M'Gowan, who has assisted in procuring photographs, revising proofs, and in many other ways.

The following books, amongst others, have been consulted:—

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II. HALF-BRED SHEEP.

By ROBERT MACMILLAN, Woollea, Moniaive.

THE preceding article deals with one of the best-known breeds of white-faced sheep, the Cheviot. It now falls to treat briefly the "half-bred"—that is, the breed of sheep which, in many of the best cultivated districts of South Scotland and North England, has proved itself to be the farmer's best friend, alike in times of agricultural boom and depression. It is difficult, if not indeed impossible, to find out now exactly when the half-bred sheep came to be recognised as a breeding animal. It is certain, however, that the old Border families, among others the Johnstones, the Elliots, and the Borthwicks, when they found that their old trade of lifting other people's sheep and cattle had become unfashionable as well as dangerous, started to found a new breed, which would better suit the requirements of the district in which they lived than any already in existence. They found exactly what they wanted in the cross between the Cheviot and the Border Leicester, and for at least one hundred years half-breds have been reared in ever-increasing numbers. Of course the system of crossing different breeds has gone on for a much longer period, but prior to the time mentioned the entire produce was fed off, and only the pure-bred animals were used for breeding. Now this is completely changed, and many flocks are in existence which have every right to be considered pure bred. The wonder is that with so many enthusiastic patrons no distinctive name has ever been adopted. The poet sings, "The rose by any other name would smell as sweet," and

doubtless under their existing cognomen they will produce as good mutton as if they were designated "Tweeddales" or "Bowmonts." But the old adage applies most aptly, "Give a dog a bad name and it will stick to him," and it is certain that so long as the bar sinister is flaunted in the face of the public, so long will recognition as one of the very best breeds in existence be denied. The name, or rather the want of name, strikes one as being every bit as cruel as the placard which David Copperfield had to wear round his neck at school.

Half-breds, although most numerous in the Border counties of Scotland and England, are extensively bred in the counties of Sutherland and Caithness, and owing to their great size, find

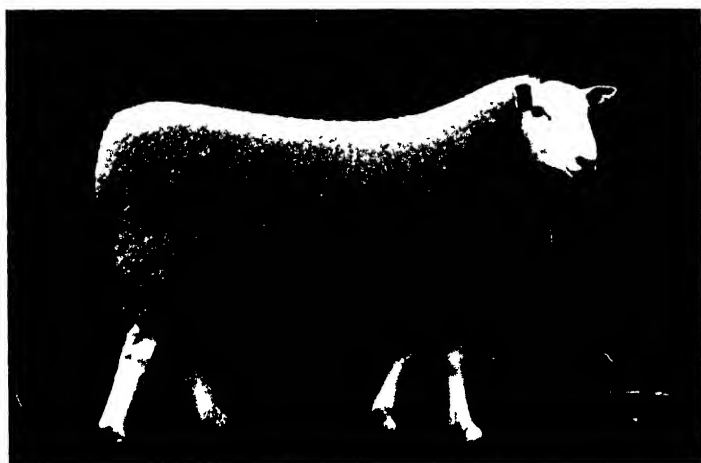


Fig. 40.—*Half-bred Ram.*

a ready market at St Boswells and other centres. Undoubtedly the extensive reclamation of hill ground which our ancestors indulged in helped to popularise this class of sheep, and the original breeding from Cheviots did much to increase the value of Cheviot ewe lambs. At the same time, the discovery that half-breds possessed great hardiness did the Cheviot breed not a little harm, and on the lower reaches of many districts they were entirely displaced. Many flock-owners work on the plan of breeding their ewe stocks from half-bred ewes entirely, but like, at least occasionally, to revert to first principles by purchasing first cross rams. Opinion on this point is, however, much divided, and the practice seems to be quite unnecessary provided that care be taken and judgment used to prevent the flock becoming bare of wool, especially on the belly and breast. The first cross is probably the tighter type of ewe, but great care

must be taken to breed only from heavy milking strains of Cheviot. The second cross or "pure bred" half-bred is bigger, and generally beats the first cross in the showyard. That is to say, it has developed more fully the points which breeders aim at, and if properly attended to it will clip more wool. Compared with the two original breeds from which it springs the half-bred is bigger and more prolific than the Cheviot, and is hardier and a better nurse than the Border Leicester, besides yielding more lean mutton. It is quite common to cross the half-bred ewes with rams of other breeds, such as the Border Leicester, the Oxford, the Suffolk, the Shropshire, or the Hampshire Down, and the produce from all of these are of great size



Fig. 41.—*Half-bred Ewe.*

and easily fed. Probably just at present the Oxford and Suffolk are the most popular for this purpose.

A typical ram should have a square carcase, wide, deep, and fairly long, and be well planted on clean, flat-boned legs, with no feather on them, but covered with white hair. He should be a good, well-balanced walker, with a fine carriage and a bold look-out. He should be possessed of a good masculine head of fair length, clean cut without coarseness, with well-developed nostrils, black nose, and dark eyes, and ears of a fair size well held up. The head, ears, and crown should be well covered with white hair and free from blue. The neck should be strong, not too long, and well joined on to the shoulders; and the shoulders should be open, without a wither, and well filled up behind. He should be level fleshed all along his back from the shoulders. The loins should be wide, not over long, with big

quarters. The wool should be thick set in the skin, all of one quality, straight, without much "pirl" in it, and as free from coarse hair at the buttocks as possible. He should be well covered below, well woolled up at the neck, and well clad down to the knees and hocks.

As is the case in working with any breed of sheep, the first essential is to have the ewes sound and level, both in quality and condition. Great care must also be taken to have them in a natural thriving order before putting them to the rams. This object is best attained by giving them a run on good clean pasture, with possibly a little artificial food or turnips in addition. The date for putting out the rams varies from 1st to 20th October, according to circumstances. After tugging,



Fig. 42.—*Half-bred Gimmers.*

the ewes require little but their ordinary pasture until the middle of December, when they probably begin to get a little assistance in the way of artificial food or turnips on the grass. From then on until lambing commences the rations are gradually increased, the object aimed at being to have the sheep always thriving and active, with plenty of lean flesh on them. Hay is also fed to them, and a judicious proportion of dry food and turnips along with it tends both to increase the growth of the lamb and the flow of milk. The crop of lambs varies from 125 per cent to 180 per cent, according to pasture and management. After lambing, and on till the end of May, it is essential to feed liberally, as the young lambs are at that period entirely dependent on the milk-supply. Lambs that are intended to be sold fat must be fed all the time. After shearing, which

usually takes place from the 10th to the 20th of June, the lambs are in many cases fed separately from their mothers. This practice tends to keep the latter fresher and more fit for further usefulness as breeders. About the beginning of August the lambs are taken off their mothers and put on to the best clean pasture procurable, while the ewes are turned out to the hill or put on poor keep till the milk goes off them. Usually three crops of lambs are taken, and afterwards, early in September, the oldest class of ewes is drafted away. They are mostly bought by farmers on the lower arable farms, who breed from them for the early fat-lamb trade. The entire keeping stock is also gone carefully through at this time, all shotts and bad thrivers put away, and the process begins again for another year. To sum up, the half-bred ewe is a great rent-paying sheep, which will do well either on a hill or on the best arable land.

BEE DISEASES AND BEE ENEMIES.

By DR R. STEWART MACDOUGALL, M.A., Consulting Entomologist
to the Society.

THE literature on Bee Diseases, their cause and treatment, continues to grow at a rapid rate. Workers all over Europe and America, under Government auspices, in Universities and Colleges, in Bee Associations and Societies, are busy with the study of these diseases. The present review gives a general account of the subject, and summarises for the members of our Society the main results of recent work.

DISEASES OF BEES.

The subject falls conveniently into two divisions—viz., Diseases of the Adult Bee and Diseases of the Brood, *i.e.*, the grubs, and it may be the pupæ.

DISEASES OF THE ADULT.

1. ISLE OF WIGHT DISEASE OR MICROSPORIDIOSIS.

This disease of bees, though existing in Britain and other countries previous to 1904, only then came to be known by the name Isle of Wight Disease, following complaints of serious loss of bees in that island. Since then the disease has been

reported from a number of places in England and Scotland. In response to inquiries, the Board of Agriculture and Fisheries took the matter up, and as a result Dr A. D. Imms reported in 1907¹ and Dr W. Malden in 1909.² A third and very full report³ appeared in May 1912, with valuable contributions from Graham-Smith, Fantham and Porter, Malden, and Bullamore, followed in July 1913 by a further report⁴ by the same authors. Continental workers had also been busy investigating the disease.

Quite independently, Zander, working in Bavaria in 1907, and Fantham and Porter in England in 1906, discovered, in the alimentary canal of diseased bees, a microscopic animal parasite belonging to the Protozoa. The parasite received the name of *Nosema apis*, and it has been suggested that the disease itself might be named Microsporidiosis, after the section in the Protozoa—the Microsporidia—to which *Nosema* belongs.

This disease is not a new disease, but is probably a disease which has long been in our country, and in special years has occasioned considerable loss among bees. It is only now, however, that *Nosema apis* has been blamed. There are cycles of bad years when the disease, as at present, presses itself on the notice of bee-keepers. In intervening periods the disease is at a minimum, and attracts little or no attention, and the small loss is ascribed to something else—just as, for example, one can find in any year the Diamond-back Moth in the turnip fields, but only in occasional years, with favouring environment, does the moth become a plague.

Further, it seems that *Nosema apis* may be present and yet may not be death-causing. In America the parasite *Nosema apis* is found, but it is not pathogenic. In discussing this point last autumn with Mr F. W. L. Sladen, the bee expert for the Dominion of Canada, Mr Sladen suggested that the immunity of American bees in the presence of *Nosema apis* might be due to the difference in climate, or to a less virulent strain of *Nosema apis*. In an allied Protozoan Order one of the species (*Myxobolus pfeifferi*) is a deadly enemy of the barbel in some rivers, e.g., the Moselle, whereas the same parasite is practically harmless, in many other rivers, to the same fish.

Nosema apis was discovered in Australia in 1909, and has since been recorded from a number of apiaries in Australia and Tasmania without, it is said, accompanying loss.⁵

¹ 'Journal of the Board of Agriculture,' vol. xiv. No. 3. June.

² Ibid., vol. xv. No. 11. February.

³ 'Supplement to the Journal of the Board of Agriculture,' vol. xix. No. 2. May 1912.

⁴ Ibid. July 1913. "Further Report on the Isle of Wight Disease."

⁵ "Diseases of Bees," by F. R. Beuhne, 'Journal of Agriculture,' Victoria, August 1913.

That *Nosema apis* is certainly a primary cause of Isle of Wight Disease is proved by the experimental work of Fantham and Porter, Graham-Smith, and Bullamore. In these experiments¹ spores of *Nosema apis* were offered to healthy bees in contaminated honey. The bees took the disease and died in ten days; while a control set of bees, fed on uncontaminated honey, lived and remained healthy. That the bees which died, died of *Nosema apis* was proved by dissection and microscopic examination.

The same results were got when healthy bees were fed on honey contaminated with the fæces of bees sick of Isle of Wight Disease.

Still again, diseased bees introduced to a cage containing twenty-five healthy bees communicated the disease to these healthy ones. The bees in this third experiment were fed on quite pure honey. By the fifteenth day twenty were dead, owing to *Nosema* attack.

Fantham and Porter have found, in experiment, that *Nosema apis* kills bluebottles, house-flies, and sheep keds.

Other possible Causes of the Disease.

The only proved cause, so far, is *Nosema apis*. Dr Malden's and Dr Graham-Smith's researches on Bacteria present in the diseased bees show that till now no bacterial species can be blamed as setting up infection. *Bacterium pestiformis apis*, found by Dr Malden in 40 per cent of the cases suffering from Isle of Wight Disease, is not the primary cause of Isle of Wight Disease.

Nature of Isle of Wight Disease.

This is a disease of the alimentary canal of the bee due to the attack of a microscopic animal parasite named *Nosema apis*. The cells or lining membrane of the bee's chyle-stomach and intestine are destroyed; the gut cannot do its work, and the bee dies.

Position of Nosema in the Animal World.

Nosema apis belongs to the Protozoa or one-celled animals, many of which are independent organisms. Some of the Protozoa, however, are parasites living in, and at the expense of, live hosts, sometimes without doing any visible harm to the host, but in other cases giving rise to dangerous diseases. The Protozoa are divided into Classes, one of which is the Class Sporozoa. All the members of this Class are parasites. To it

¹ "Report on Isle of Wight Disease." 'Supplement to the Journal of the Board of Agriculture,' May 1912, pp. 79 to 94; and "Further Report on the Disease" in 'Journal of Board of Agriculture' for July 1913.

Nosema apis belongs, and to that special section of the Class marked by the following characteristics: (1) the parasite lives inside the cells of the host; (2) the parasite, in its feeding and growing stage, is capable of movement; (3) during the growth of the parasite, spores are formed for the purpose of multiplication; (4) the spores are very minute, and under special magnification exhibit a space at one end known as a "polar capsule."

The genus *Nosema* had, before the epidemic caused by Isle of Wight Disease, already a bad reputation, as one of its members, *Nosema (Glugea) bombycis*, attacking the silkworm, caused such mortality that between the years 1850 and 1870 the silk industry in France and South Europe was nearly ruined. This disease of silkworms is known as Pebrine Disease. In this Pebrine Disease healthy silkworms become infected by eating leaves that have been soiled by the excrement of diseased silkworm caterpillars, the excrement containing the spores of the disease. It is in a similar way, by contaminated food or water, that bees become infested with *Nosema apis*.

Pebrine is infective in another way, by the parasite reaching the ovary of the female moth, so that the eggs when laid are infected. This passage of the parasite from parent to offspring by way of the egg, the young being born with the hereditary taint, has not been proved to occur in the case of bees and the Isle of Wight Disease.

Life History of Nosema apis.

The life-history has been worked out in detail by Fantham and Porter.¹ Infection of the bee is by means of spores received in infected food or water, or in infected excrement that is being removed from the hive by workers. A *spore* is a microscopic piece of living matter, $\frac{1}{8000}$ inch in size, surrounded by a tough resistant coat. By virtue of this coat the spores are able to persist unharmed for some time in the open. On such a spore being swallowed by a bee it passes to the chyle-stomach or midgut of the bee. The chyle-stomach or ventriculus, shown in Fig. 43, is an important region of the alimentary tract, having both digestive and absorptive functions.

The coat or wall of the spore is softened by the juices of the chyle-stomach, and from a special region of the spore a delicate thread is partly protruded; this thrust-out thread anchors the spore to the wall of the gut; the thread then becomes quite extruded. Through the pore in the spore wall the tiny enclosed droplet of protoplasm makes its exit. This droplet of protoplasm contains two specialised pieces called *nuclei*. The minute

¹ H. B. Fantham, D.Sc., B.A., and Annie Porter, D.Sc., F.L.S., in 'Proceedings of Zoological Society of London,' 1911, p. 625. and 'Supplement to Journal of the Board of Agriculture.' Supplement, No. 8, vol. xix., No. 2, May 1912, p. 57.

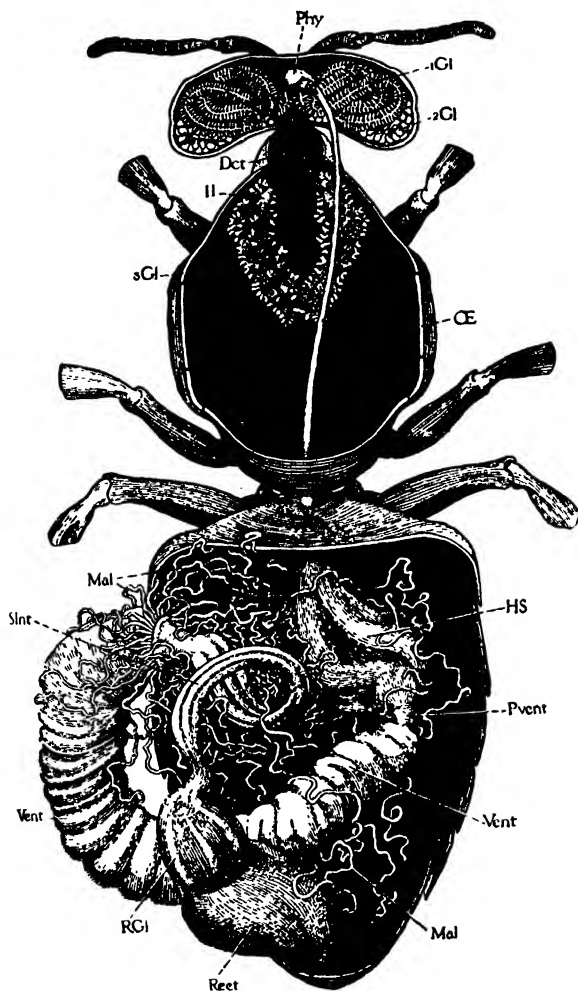


Fig. 43.—Alimentary Canal of Worker Bee and related Glands.

(From 'The Anatomy of the Honey Bee,' by R. E. Snodgrass, U.S. Dep. of Agric. Bureau of Entomology.)

1 Gl = Pharyngeal glands.
 2 Gl = Salivary glands of head.
 3 Gl = Salivary glands of thorax.
 Det = Duct of salivary glands.
 Phy = Pharynx.
 CE = Gullet.

HS = Honey stomach, for holding the nectar being collected from flowers.

Pvent = Proventriculus leading to Vent = Ventriculus or stomach or chyle-stomach.
 Sint = Small intestine.
 Mal = Malpighian tubules (excretory).
 Reet = Large intestine.
 RG = Rectal glands.

droplet of protoplasm is technically known as an *amœbula*. The *amœbula* divides into two daughters, each with its own

nucleus, and each daughter may in turn, by nuclear division, give rise to others. In this way the parasite increases its numbers. These little nucleated droplets of living matter can move, and they proceed to wander—and are therefore known as *planonts* or wanderers (the word is Greek and means a vagabond or wanderer)—over the inner lining wall of the gut. The cells lining the gut are known as *epithelial* cells, and these cells are invaded by the wanderers. (Some of the *planonts* may bore right through the wall of the gut altogether, and enter the body-cavity, where they remain for a time.) The same epithelial or lining cell may be invaded by several *planonts*. Once inside the epithelial cells the *planonts* no longer move but remain passive, feeding and growing at the expense of the invaded cells, and so destroying them. The attacking parasites in this feeding stage can cause the death of the bee. Various regions of the alimentary canal can be invaded, but the chyle-stomach is the most susceptible region, as its wall is thinner and more easily penetrable.

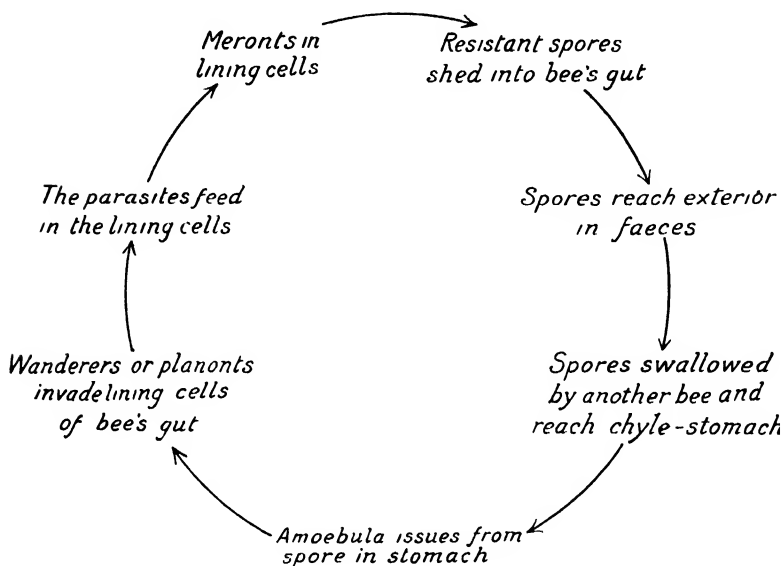
Inside the invaded cell of the gut the *planont* divides into 2 or 4—sometimes more—pieces, each with its own *nucleus* (the nucleus is the controlling and directing portion of the protoplasm). The pieces resulting from the division are known as *meronts* (*meron*, a part), and by such division the parasite still further increases its numbers. It is in this multiplying stage that the parasite is most fatal.

The spoiled lining-cells of the stomach break away and fall into the gut, where Fantham and Porter have found them crowded with *meronts*. In spite of the fact that the bee has the power of regrowing such lining-cells, there is, in cases of severe infection, great mortality among the bees.

From the time that the cells lining the gut are invaded, till the stage we have reached, the parasite has been engaged chiefly in providing for itself as an individual—for its food and its multiplication. But its second great problem has to be solved—namely, the continuance of its race, and for this purpose *resistant spores* are formed. The earlier forms of the parasite perish at once if they reach the open, and quickly if the bee dies. The spores, however, persist, and are the means by which a new host can be reached and the race continued. After growing for some time each *meront* passes through a complex set of changes resulting in a spore; the rule is one spore from one *meront*. The spores are formed by the living matter of the *meront* contracting away somewhat from the enclosing wall, and becoming surrounded by a spore coat. Cells of the bee's alimentary canal containing spores are shed into the gut; here the cells burst; the spores are thus liberated in the stomach and intestine, and pass to the outside in the faeces of the bee,

with the chance, in contaminated food or water, of being conveyed to, and taken up by, hitherto healthy bees, and in the chyle-stomach of the new bee initiating the life-cycle just traced.

This life-history may be represented graphically thus—



Nosema apis has been found in the alimentary canal of workers, queen, drones, and grubs.

The parasite is favoured by factors in the environment which tend to reduce the health and strength of the bees—*e.g.*, a bad season for collecting, or infection taking place just after the hibernating period when the bees are reduced in vigour.

Symptoms of the Disease.

The only absolutely constant symptom is death of the bees. Other symptoms commonly present and serving to call attention to the disease are—

- Dwindling of the stock, even in conditions that ordinarily would be described as favourable for the bees;
- Many bees found crawling in front of the hives;
- Dislocation of wings and inability to fly;
- Marked distension of the abdomen;
- The death of the bees in groups or clusters.

In spite of these and other occasional symptoms, Graham-Smith, and the Continental workers Zander and Nussbaumer,

believe that microscopic examination is necessary before the disease can be properly diagnosed.

The matter is complicated by the fact that symptoms connected with other bee diseases may be present, and this leads to confusion and difficulty.

How the Disease is spread.¹

1. By water in the neighbourhood of the hives infected with bee excrement containing the *Nosema* spores.

2. From honey, pollen, or wax in the hive infected with bee excrement containing the *Nosema* spores.

3. Some bees are distinctly resistant to the disease, and as such infected resistant bees may live for a considerable time harbouring spores, they carry the disease about and spread the spores. In the work of spreading infection, drone bees play a part, not only in infecting food material in their own hive, but also in their visits to other hives. Robber bees, stealing from a sick colony, may take disease and carry it. Some insect enemies of bees, described below, can also be carrying agents.

4. The disease may be spread in the sale and distribution of infected swarms.

5. The disease may be communicated in feeding bees on honey taken from an infected hive. How long a hive that has had the disease may remain infective depends on a number of factors—*e.g.*, whether or not spores have been deposited in it, and the length of life and vitality of the spores. Concerning these points we have as yet no definite knowledge.

Treatment.

Really nothing can be stated yet which will convey much encouragement. Drugs have been suggested and tried; bees and the combs have been sulphured; the insides of hives have been painted with patented preparations; but with no enduring result.

Prevention should be aimed at by—

The burning of dead bees;

The destruction of diseased colonies;

The disinfection of the ground about the hive with quicklime or carbolic acid;

The disinfection of hives that have had the disease by the use of formalin or carbolic acid, and by charring with a painter's lamp.

¹ An excellent summary is given on p. 55 of the newly issued 'First Annual Report of the Horticulture Branch of the Board of Agriculture and Fisheries for the year 1912-13.'

2. DYSENTERY.

Dysentery or diarrhoea may accompany various bee ailments; for example, it may be one of the symptoms of Isle of Wight Disease. On the other hand, *Nosema apis* may be present, and result in the death of bees, without dysentery showing as one of the signs. In our use of the word here, Dysentery refers to that condition which is found in bees in winter and early spring, and results in the soiling of the combs, the inner wall of the hive, the floor of the hive, the entrance to the hive, and the immediate surroundings of the hive, with a watery, evil-smelling, brown-yellow excrement. Dysentery is an intestinal trouble in which the hind-part of the alimentary canal is greatly swollen, owing to accumulation of waste matter. Primarily the food has been unsatisfactory—*e.g.*, the honey collected in the late part of the season for winter store has remained too watery, or a large proportion of honey-dew has been collected, or the syrup offered to the bees has been watery and from poor sugar. Continued unfavourable weather may prevent the bees from getting into the open to void their excrement, and the hind gut swells, and its contents are shed in the hive. The oncoming of favourable, sunny weather checks the disease by allowing the bees into the open.

Preventive and Remedial Treatment.—(1) The provision of good winter stores.

(2) The removal of unsealed honey.

(3) Warm hives.

(4) Strong colonies able to make complete use of the space provided.

3. MALIGNANT DYSENTERY.

This disease, described by Professor Zander in 1909 as infectious and fatal, had, as one of its accompaniments, the soiling of the hive, alighting-board, and immediate surroundings with excrement voided by the diseased bees, which were unable to fly, and could therefore not make the usual cleansing flights. Zander discovered *Nosema apis* in these bees, and the disease is evidently what is known now as Isle of Wight Disease.

4. PARALYSIS.

This is a disease of adult bees, known only by its symptoms. No definite cause has been discovered. None of the numerous bacteria or fungi—and every average hive contains a considerable fungus and bacterial flora, mostly harmless—found in the hive, or on and in the bees, has any proved connection with Paralysis in bees. This Paralysis is known in Europe, America, and Australasia. The symptoms associated with it are—

- (a) Worker-bees crawling in front of the hive, and showing a trembling of the abdomen ;
- (b) the abdomen markedly swollen (this condition is absent in the young bees) ;
- (c) inability to fly ; the bees which climb up plants to get a better "set-off" tumble to the ground ;
- (d) sprawling gait ;
- (e) quivering of the wings.

There is no proof yet that Paralysis is infectious, but there is suggestion that the disease is constitutional.

The real cause being unknown, treatment is difficult or impossible. Mr F. E. Beuhne, the Bee Expert of Victoria, in the course of a series of articles on Bee-keeping in Victoria in the 'Journal of Agriculture,' Victoria, writes in one of them,¹ under the heading "Bee Paralysis": "Many remedies have been advocated, such as sprinkling the bees with sulphur flour, spraying them with brine, or feeding medicated syrup, but no cure is effected. When using sulphur the brood should be removed, as the sulphur will kill all the unsealed brood and eggs. The brood removed may be given to any other colony, without risk of affecting it, provided care is taken to shift none of the adult bees with the combs. There is no doubt that some strains of bees are predisposed to paralysis, and the only treatment known to be at all effective is to kill and replace the queen of every hive showing the first symptoms of the disease, and thus gradually eliminate it. If the new queen is of the same strain, or of another one equally predisposed, no cure will result. In obtaining queens from elsewhere for the purpose of re-queening colonies showing paralysis, it will be better to get them from an apiary from which the disease has been eliminated, rather than from one in which it has never made its appearance, because in the former the queens would be from stock which proved immune in contact with the disease, while in the latter there has been no such test. It is of the utmost importance that on no account should queens be raised or kept from stocks which show signs of paralysis, no matter how desirable they be in all other respects. Further, the queens of all affected hives should be replaced as soon as possible to prevent the raising of predisposed drones, which, by mating with the young queens, would perpetuate the weakness in the apiary."

5. MAY SICKNESS.

This is an undefined disease. The accounts vary so, that May Disease may well not be any separate disease, but a name applied to one or other of the diseases already described.

¹ 'Journal of Agriculture,' Victoria, 11th Aug. 1913, p. 489

DISEASES OF THE BROOD.

The most notorious of these, as causing great loss, are known under the name of Foul Brood. Under the name Foul Brood more than one disease is included.

The Foul Brood diseases are due to the attack of Bacteria on the grubs, and it may be the pupæ. Just what species of Bacteria invade the grubs and set up the disease has not yet been absolutely agreed on; there is uncertainty. Bacteriologists in Europe and America have been—and are—working hard at the problem, and many papers have been published.¹

¹ LITERATURE ON FOUL BROOD.

1. Cheshire and Cheyne, August 1885. The Pathogenic History and History under Cultivation of a New Bacillus (*B. alvei*) of Foul Brood. Journal of the Royal Microscopic Society, Ser. II., vol. v., Part 2, p. 581.
2. Mackenzie, December 1892. The Foul Brood Bacillus: its Vitality and Development. Eighteenth Annual Report of the Ontario Agricultural College and Experimental Farm, p. 267.
3. Harrison, December 1900. Foul Brood of Bees. Bulletin 112. Agricultural College and Experimental Farm, Toronto.
4. Lambotte, September 1902. Recherches sur le microbe de la loque maladie des abeilles Travail du laboratoire de l'Institut de Pathologie et de Bacteriologie de l'Universite de Liège. Annales de l'Institut Pasteur, vol. xvi., No. 9.
5. Moore and Franklin White, 1903. A Preliminary Investigation into the Causes of the Infectious Bee Disease prevailing in the State of New York. Tenth Annual Report of State of New York Dep. of Agric.
6. Franklin White, 1904. Further Investigation. Eleventh Annual Report of State of New York Dep. of Agric.
7. Burri, 1904. Bakteriologische Forschungen über die Faulbrut. Schweizerische Bienenzeitung, Nos. 10 and 11.
8. Franklin White, 1905. The Bacterial Flora of the Apiary, with Special Reference to Bee Diseases. Cornell University, Ithaca, New York.
9. Burri, 1906. Bakteriologische Untersuchungen über die Faulbrut und Sauerbrut der Bienen. Schweizerische Bienenzeitung.
10. Maassen, 1906. Faulbrutseuche der Bienen. Mitteilungen aus der Kaiserlichen biologischen Anstalt für Land- und Forstwirtschaft.
11. Phillips, 1906. The Brood Diseases of Bees. Circular No. 79; now replaced by Farmers' Bulletin 442. U.S. Dep. of Agric.
12. Franklin White, 1906. The Bacteria of the Apiary, with Special Reference to Bee Diseases. Technical Series, No. 14. U.S. Dep. of Agric., Bureau of Entomology.
13. Maassen, 1907. Über die Sogennanten Faulbrut der Honigbienen. Mitteilungen aus der Kaiserlichen biologischen Anstalt für Land- und Forstwirtschaft, vol. iv.
14. Franklin White, 1907. The Cause of American Foul Brood. Circular No. 94. U.S. Dep. of Agric., Bureau of Entomology.
15. Maassen, 1908. Zur Ätiologie der Sogennanten Faulbrut der Honig-

The problem is a difficult one for several reasons. The parasitic bacterial enemies are extremely minute, measuring in size from $\frac{1}{20000}$ inch to $\frac{1}{7000}$ inch, and so microscopic examination and differentiation is not easy. Numbers of different kinds of bacteria are present in the diseased grubs, and these have to be carefully isolated and grown in pure cultures. Then experiment has to follow to decide whether the isolated species is—

- (a) a primary enemy able to initiate the disease;
- (b) a secondary enemy following the first and perhaps assisting the primary enemy;
- (c) an associated and neutral form, present but not disease-causing nor disease-aiding.

It is possible, too, for more than one Brood disease to be present at the same time, with overlapping symptoms.

Generally it may be said that the Foul Broods are infectious diseases due to the attack by some Bacterium on the grub of the bee. This bacterium is either a rounded or somewhat lance-shaped organism or a rod-like organism. These bacteria can move. They rapidly attain full growth, and then multiply by dividing into two, each daughter, in less than half an hour in favourable conditions, growing to the size of the original mother bacterium and then dividing in turn, and so on through many generations. These bacteria, besides being able to grow and multiply, have the power of giving rise to spores. At one region of the bacterium the living matter collects into a little mass surrounded by a distinct coat; this is a spore. The spore is set free by the rupture of the old wall of the bacterium. These spores are resistant to unfavourable environment; conditions which would easily result in the death of the bacteria in their ordinary feeding stage are harmless against the spores. On the return of favourable conditions the spore gives rise to the ordinary vegetative form of the bacterium.

bienen. Arbeiten aus der Kaiserlichen biologischen Anstalt für Land- und Forstwirtschaft, vol. vi.

- 16. Maassen. Also in vol. vii.
- 17. Franklin White, December 1908. The Relation of the Etiology of Bee Diseases to the Treatment. U.S. Dep. of Agric., Bureau of Entomology. Bulletin No. 75.
- 18. Malden, 1910. Diseases of Bees. Journal of Economic Biology, vol. v., Part 2.
- 19. Phillips, 1911. The Treatment of Bee Diseases. See above under No. 10.
- 20. Franklin White, May 10, 1912. The Cause of European Foul Brood. Circular No. 157. U.S. Dep. of Agric., Bureau of Entomology.

THE KINDS AND NAMES OF FOUL BROOD DISEASES.

For a very long time it has been known that there are at least two kinds of Foul Brood, and these have come to be known as European Foul Brood and American Foul Brood. There is nothing strictly geographical about these two common names. European Foul Brood and American Foul Brood are present and havoc-working in Europe and in America, and indeed both may be present in the same apiary. We shall in this Review use these names as known and convenient. Other non-technical names have crept into the literature, such as Black Brood—an unhappy name meant to denote European Foul Brood—Stinking Foul Brood and Non-Stinking Foul Brood. The term Sour Brood has also come into use.

Continental workers write of European Foul Brood, American Foul Brood, and Sour Brood as if these were three separate diseases each caused by a different species of bacterium—viz., European Foul Brood, excited by *Bacillus alvei* (the bacillus of the hive), American Foul Brood, excited by *Bacillus larvæ*, and Sour Brood, excited by *Streptococcus apis*. *Streptococcus apis* was described by Maassen in Germany and by Burri in Switzerland.¹ (The name *Streptococcus* is the name used when rounded bacteria divide regularly so as to form chains.) There is still some uncertainty, but much progress has been made, and recent work in America by Dr White and the Bee Division of the United States Department of Entomology has yielded important results. There is no disagreement about the existence of the three above-mentioned bacteria; but more satisfactory experimental proof is wanted as to whether all three are primary exciting agents.

In 1912 Dr White² isolated from Foul Brood material a new bacterium, and experimentally proved that it set up Foul Brood in healthy stock. This bacterium he has named *Bacillus pluton*. *Bacillus alvei*, discovered and named by Cheshire and Cheyne,³ has since 1884-86 been associated with European Foul Brood, and believed by most to be the exciting cause of this disease. There is much evidence of the commonness of its presence in cases of European Foul Brood, but in spite of this the proof is not absolute that it is the primary cause. Dr White and other workers lean to the view that *B. alvei* is not a primary cause, and that *Streptococcus apis* is not a primary cause, but that these two are only associated species, with

¹ See Nos. 9 and 15 in list of literature on p. 160.

² The cause of European Foul Brood. U.S. Dep. of Agric., Bureau of Entomology, Circular No. 157, May 1912. By G. F. White, M.D., Ph.D.

³ See No. 1 in list of literature on p. 160.

Bacillus pluton the real primary enemy, and the cause of the brood disease known as European Foul Brood. That *Bacillus larvæ* is the exciting cause of American Foul Brood is admitted; Franklin White found this species and gave the proof.

EUROPEAN FOUL BROOD AND AMERICAN FOUL BROOD COMPARED.¹

<i>European Foul Brood.</i>	<i>American Foul Brood.</i>
Attacks worker grubs, but not uncommonly also the drone and queen grubs.	Attacks usually the worker grubs, rarely those of drone and queen.
The attack is earlier, the diseased brood not being capped.	Attack is later, often about the full-fed stage, with the capped brood often affected.
Colour in the late stage, yellow.	Colour in the late stage, brown or coffee-colour.
Sometimes a slight odour, or a sour odour, or the odour of carrion.	A distinct gluey odour.
The decomposing grub becomes somewhat watery or slightly sticky.	The decomposing mass is distinctly sticky— <i>e.g.</i> , if a thin piece of wood be thrust into the cell the decaying material will cling to the wood and allow itself to be drawn out into a sticky thread for an inch and over.
At last all that remains of the dried-down grub is a scale. The scales can be removed without difficulty, and the bees actually remove a number.	The scale is sticky and not easily removable.

In the last resort a microscopic diagnosis is required for absolute certainty, inasmuch as the symptoms in the two contrasted broods vary, and may overlap. Thus a distinctly foul odour may issue from both; the odour may vary at different stages; there may be more than the average stickiness in European Foul Brood; in American Foul Brood, younger uncapped brood may be affected,—and so on.

In both cases the cappings of cells with infected brood may be perforated and sunken, and there may be no cap at all.

Infection and Spread.

The disease is carried and spread for the most part in contaminated honey, and this—

- (a) by feeding bees on honey from a diseased colony;
- (b) by using combs from a diseased colony;
- (c) by robber bees entering diseased hives and carrying the disease in the stolen honey;

¹ See No. 20 in list of literature on p. 161, and notes in the bee literature generally.

- (d) by using infected appliances—*e.g.*, frames or utensils ;
- (e) by the failure to disinfect hands and clothing after working with a diseased colony before proceeding to handle healthy hives.

Preventive and Remedial Measures.

1. Environment favourable to the bees—*e.g.*, good hives in well-chosen healthy situations, young vigorous queens, strong colonies.

2. In cases of a very bad infestation, and with a weak colony, do not waste time in curative treatment, but first destroy the bees by sulphur fumigation, and then burn combs, frames, &c. The hive should then be thoroughly disinfected and cleaned, and the stands also disinfected. Should the hive be a fixed comb hive, the whole hive should be burned.

3. The thorough disinfection of everything that has come in contact with infected combs or hives.

4. With strong colonies worth saving do not attempt to disinfect diseased combs, but burn them. Shake the bees from the diseased colony into a clean hive, and keep them shut up for forty-eight hours at least. The purpose of this shutting up of the bees is to force them to use up such honey as they may have carried out with them ; any spores present will have reached the outside in the excrement. The bees may then be safely introduced to a fresh hive. The hive just vacated after the forty-eight hours' stay must be thoroughly disinfected. The infected combs, frames, and quilts of the hive from which the bees were first removed should be burned, and the hive itself cleansed by the use of a painter's lamp for destruction of spores.

5. Leaflet No. 32 of the Board of Agriculture and Fisheries recommends as a disinfectant for appliances, a solution of one ounce Calvert's No. 5 Carbolic Acid in 12 ounces of water.

Leaflet No. 38 of the Department of Agriculture and Technical Instruction for Ireland recommends as a disinfectant for clothing (not for hand-washing, for which carbolic soap may be used), overalls, stands, and surroundings of stands, the following soda solution—

Soda crystals	.	.	.	2½ lb.
Water	.	.	.	1 gallon.

Dissolve the soda in hot water (not with bare hands), boil, and use when boiling.

SACK BROOD.

This is the name given to a disease of bee grubs described by Dr G. Franklin White.¹ The name indicates that the dead grubs have a sack-like appearance, and can be lifted bodily from the cell without rupture. Grubs suffering from the disease die after the time of capping. Sometimes the cap is not completed; in other cases the bees cut through the cap of the cell containing the diseased grub.

The characteristics of this disease, as described by Dr White, which serve to distinguish it from the Foul Broods, are—

- (1) The body wall of the dead grub does not easily break, and so the grub can be lifted out bodily and unbroken;
- (2) the form of the grub does not alter so much;
- (3) the watery content of the body of the grub;
- (4) the dead, dried grub can be removed easily from the cell wall;
- (5) no odour.

A large number of cases have passed through Dr White's hands, but investigation has failed to reveal the causal organism. Experiment has proved that the disease is infectious. A virus filtered from the dead larvæ was fed in syrup to a number of different, healthy colonies and Sack Brood was produced.

Dr White writes that the "virus is killed by the application of a comparatively small amount of heat."

PICKLED BROOD.

More information is required before this name can be definitely applied. There is some evidence that species of the mould *Aspergillus* are capable of killing larvæ, pupæ, and adult bees. Howard,² in 1896, working in Texas, named *Aspergillus pollini* as a parasitic enemy. Maassen,³ in 1906, ascribed the death of grub and adult to *Aspergillus flavus*, and Hein,⁴ in a case investigated in Bavaria, names the fungus as *Aspergillus fumigatus*.

OTHER "BROODS."

Apart altogether from disease, brood may die from starvation, or from overheating, or from cold. Brood killed by cold is sometimes termed "Chilled Brood." The too low temperature

¹ 'Sac Brood: A Disease of Bees,' by G. F. White, M.D., Ph.D. U.S. Dep. of Agriculture, Bureau of Entomology, Circular No. 169.

² 'American Bee Journal,' 1896, xxxvi. p. 577, by W. R. Howard.

³ 'Mitt. aus. d. Kais. Biol. Austalt für Land- und Fortwirtschaft,' June 1906, vol. 2.

⁴ 'Märkische Bienen-Zeitung,' January 1912. W. Hein.

can result not only from direct exposure to cold, but may follow indirectly from too few nurses, injudicious brood-spreading, or other mismanagement.

The workers will be noticed to carry out the dead brood, and no treatment is necessary other than correct management. The foul odour of the disease-caused "Broods" is absent.

ENEMIES OF BEES.

WAX MOTHS, OR BEE MOTHS.

Of British species of Wax Moths, two—viz., *Galleria mellonella* L. (*cerena*), the Large Wax Moth, and *Meliphora* (*Galleria*) *grisella* (*alvearia*) F., the Lesser Wax Moth—are found in hives of the honey bee. A third species, *Aphomia sociella*, is destructive in the nests of several species of the Humble Bee in both England and Scotland. *G. mellonella* has not been recorded, as far as I know, from Scotland; but it is not uncommon in England, whence it has been sent to me as destructive. *M. grisella* is also more an insect of the south, but it is occasionally found in Scotland. My friend Mr William Evans has records of it from Roxburgh, Paisley, Monkton, Perth, and East Lothian.

THE LARGE WAX MOTH.

This is an ancient enemy, references to it being found in writings 300 years before the Christian era. Before the introduction of movable frames and the great improvement in management of bees, the Large Wax Moth was a greatly feared enemy, the bee literature both in Europe and America attesting the destruction that could follow its invasion of a hive. The moth is a stealthy enemy, resting in the daytime, but at dusk flying in the neighbourhood of the hives and entering, where allowed, for the purpose of laying its eggs. The bees know their enemy, and show distinct excitement when they see it, rushing on the moth and stinging it. Professor Kellogg, who experimentally introduced the moth, both by day and night, into glass-observation hives, found that the moths were discovered at once and "stung to death and torn to pieces in a wild frenzy of anger." The actual damage is done by the caterpillars that hatch from the moth's eggs; these caterpillars tunnel into and through the wax on which they feed, also making use of cell contents and waste; five or six cells can be tunnelled in a single day.

The large Wax Moth varies in size, and partly also in form, in the two sexes; hence in the old days the males and females

were not recognised as belonging to the same species, but were described under different names as two kinds of moth. The female measures $\frac{3}{4}$ in. in length and $1\frac{1}{2}$ in. in spread of wings. The front wings are brown-grey or purplish brown, with lighter areas; hind wings grey-brown. The male is smaller and somewhat lighter, and has a more marked arch or notch at the edge of the front wings.

The eggs are extremely small, and in shape rounded-oval; colour, white.

The caterpillar measures, when full grown, about an inch; it is 16-legged; the general colour is dull or dirty grey; head, and a horny plate on the joint behind the head, brown; tail-

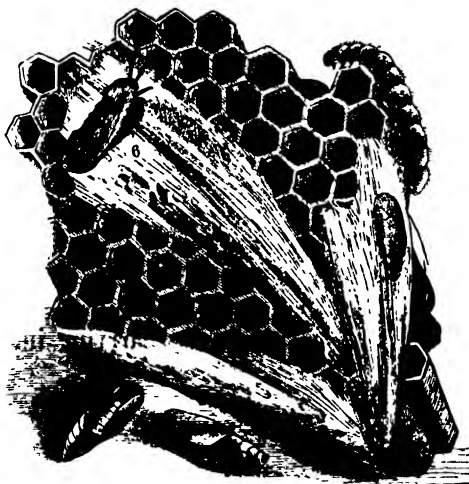


Fig. 14.--*Piece of Comb, showing the Large Wax Moth, caterpillar, pupa, and web.*

(From Brehms Tierleben.)

end light brown. Examination with a lens would show minute warts on the upper surface of the body.

Pupa.—The pupa is brownish yellow in colour, and is enclosed in a thick white cocoon of silk. Enclosed in this cocoon the pupa is safe from bee-stings.

Life History.—The moths are found in flight from June onwards to the autumn; they are dusk or night fliers. If disturbed in the daytime or in a confined space they can run about with agility. The females lay their eggs among the comb—if they have gained entry to the hive—or in chinks and crevices on or about the hive. The caterpillars on hatching eat into the wax; the tunnel or gallery increases in circumfer-

ence with the progress of the caterpillar. For protection against the bees the caterpillar spins a web of silk, and under cover of this feeds; mixed up with the web are crumbs of wax and grains of excrement. In weak bee colonies, with a large number of caterpillars present, comb and bees get enveloped in web. When full grown the caterpillar pupates on comb or in cell under cover of the spun cocoon.

The length of a life-cycle varies with the temperature and the season. The winter is passed as caterpillar or as pupa.

That this enemy is at work is known by the collections of crumbled pieces of comb mixed with powdery excrement;

by the presence of dead bee larvæ that have been carried out of the hive;

by the presence of the web;

and in bad cases from the complete desertion of the hive by the demoralised bees.

THE LESSER WAX MOTH.

The male measures in spread of wing $\frac{3}{8}$ inch, and the female just over an inch. The wings are grey-yellow in colour, and the head ochreous yellow. The caterpillar has 16 legs; head, and a horny plate on the next joint, brown; body grey-white, with a dark line down the middle of the back.

These two moths and other insect enemies may prove harmful indirectly in case of diseases by carrying infection from one hive to another.

Protective Measures against Wax Moths.

Keep strong colonies able to make use of all the comb. Hives where the bees are listless or disheartened, or poor in numbers, are likely to be invaded, and the help of the bee-keeper will be necessary. With careful oversight and up-to-date methods the Wax Moths need not be feared as a serious enemy. The more alert and courageous races of bees kept at the present day assist greatly in keeping the pests in check.

Any moth caterpillars or pupæ that are seen should, of course, be destroyed.

Avoid leaving spare and unused comb in uncovered, unprotected places, as this material will be freely used by the Wax Moth for egg-laying. Should caterpillars be noticed in such comb, then the material should be fumigated; sulphur has been much used, but experiments by Paddock, in Texas, prove the vapour of bisulphide of carbon more effective.

THE BEE LOUSE (*Braulta cæca*).

This insect measures $\frac{1}{4}$ inch in length. It clings to the thorax of queen bees and drones. It is the only member of the

Family *Braulidae*, a family which belongs to the same Sub-Order of Flies as the well-known Sheep Ked (*Melophagus ovinus*). The Bee Louse is wingless, and has very imperfect eyes (*cæca* = blind). The head is broad, the thorax broad and short, the abdomen broad and oval. The six legs each end in two comb-like structures. The puparia are dark brown and may be found in the cells.

Braula is not a serious enemy.

OTHER POSSIBLE ENEMIES.

Wasps may be described as sometimes harmful, and Ants as sometimes troublesome.

Mice may gain entry to a hive.

Birds can be the cause of loss. The Bee-eater (*Merops apiaster*), disliked on account of its destruction of bees in countries where it is native, is only a very rare visitant to England. The Blue Tit is blamed for visiting hives and eating bees that come out. Concerning this Professor Robert Newstead writes:¹ "My brother, who keeps a large apiary in Cheshire, had long been suspicious that the blue tit and the great tit were feeding on the bees. Acting on my suggestion, he concealed himself in a large box which he had previously placed quite close to some of the stocks. On the 10th of February, rather a mild day, several tits came and fed upon the *dead* bees which were lying on the ground near the alighting-board. The blue tit ate its prey on the spot, shaking the insect violently and devouring it piecemeal; the great tit invariably carried its prey to an adjacent hedge, a few feet away, and holding the bee in its foot, pulled the insect to pieces. What portions were rejected was not ascertained, but the stings were in all probability removed. Many bees were coming in and out of the hives during the whole of the time my brother was watching (one hour), and some were crawling leisurely over and about the alighting-board, but he was positively certain that the birds did not take any notice of them. The bees though dead were quite fresh."

¹ "The Food of some British Birds." 'Supplement to the Journal of the Board of Agriculture,' December 1908.

INSECT PESTS IN 1913.

By DR R. STEWART MACDOUGALL, M.A., Consulting Entomologist
to the Society.

FUMIGATION.

IN my Report of last year I gave a general account of grain and flour insects, and in mentioning fumigation as a means of treatment I described the use of bisulphide of carbon, recommending 2 to 3 lb. of bisulphide of carbon for 1000 cubic feet of air space or for 100 bushels of grain. Experiments in the United States, by Hinds and Hunter, indicate that the temperature at the time of fumigation is of marked importance. The temperature should not be below 60° F., and the room or bin must be rendered air-tight. With the temperature at from 67° F. to 70° F., then 5 lb. of bisulphide of carbon is recommended for 1000 cubic feet of space in an air-tight room. Bisulphide of carbon is explosive in the presence of a naked light, and its fumes are poisonous.

ANGUMOIS GRAIN MOTH (*Sitotroga cerealella*).

A granary enemy, not mentioned in my last report, has reached me recently for determination, the Angumois Grain Moth (*Sitotroga cerealella*). This moth resembles a clothes moth, and while still or lying dead among grain it suggests a piece of chaff. The moth, introduced in cargoes, has been taken in Scotland and England. It is common in South Europe, North Africa, and the United States, where it is an introduced pest of long standing. In the warm countries of the south the moth is a field pest, laying its eggs in the ears of standing cereals; but it also lays on grain stored in bulk. The caterpillars, on hatching, feed inside the grains. Indian corn, wheat, and barley are sometimes very badly infested. The specimens that came to me for naming were from a cargo of Indian corn condemned at an English port. The letter accompanying the specimens said: "A huge consignment of Indian corn was seized and condemned on account of its being infested with the parasites. The warehouse was a crawling mass of them. There were millions of small grey-white moths, and nearly every grain contained a weevil." In the small sample that came to me there were moths, living and

dead, and scores of weevils, *Calandra oryzae*, one of the species described last year. The Indian corn grains were mere shells, the whole of the inside having been eaten out.

THE DEATH'S-HEAD MOTH (*Acherontia atropos*).

This is the largest and most striking moth in Britain, sometimes reaching nearly six inches in spread of wing. The moth has received its name from the markings on the upper side of



Fig. 45.—*Acherontia atropos*.
(From nature.)

the thorax, which resemble a human skull. The scientific name is equally suggestive, Acheron being a river in Hades,



Fig. 46.—*Caterpillar of A. atropos*.

and Atropos one of the Fates. The moth can give out a shrill sound like the squeak of a mouse, while the caterpillar "gnashing its teeth" makes a grating noise, recalling the snap of an



Fig. 47.—*Pupa of A. atropos.*

(From nature.)

electric spark. The moth, though it has been taken in Britain from north to south, is not common. Now and again it reaches



Fig. 48.—*Transverse section of stem of Poplar, showing the damage done by caterpillars of C. ligniperda.*

(From nature; one half natural size.)

me for determination, and it was interesting to receive on the same day (October 8, 1913) the moth from Roxburgh, and the caterpillar from Fife. The moth was taken resting on the

decayed branch of a large ash-tree; the caterpillar, practically full grown, was found in a potato field.

The caterpillar rests in the daytime, and feeds at night on potato and allied plants. In colour it is yellow-green, speckled with purple; there are seven oblique violet stripes on each side, meeting on the back; spiracles black; from the back of the second last joint a rough, granular horn projects; the legs are 16 in number; the length of the caterpillar when extended is up to five inches. There is a brown variety of the caterpillar, dotted all over with white spots, and having the oblique stripes on the sides brown in colour.

The full-grown caterpillar enters the soil for pupation. The pupa is brown or chestnut-brown, and has no cocoon round it.

THE GOAT MOTH (*Cossus ligniperda*).

The caterpillars are enemies of broad-leaved trees, the softer woods being more commonly attacked. The full-grown caterpillar may reach about four inches in length. When young, the caterpillar is dull pink; but when grown, it is red on the upper surface, and yellowish flesh-colour on the sides and under surface. The borings into the wood of the infested tree not only interfere with the life of the tree, but render the wood useless for technical purposes.

Conifer trees are not attacked, and it was therefore interesting to me to receive from the north, at the end of March, caterpillars and cocoons of the Goat Moth taken from old larch stools. One of the caterpillars was full fed, and had made a cocoon from the bark chips and sawdust of the larch. Another piece of larch showed under the thick bark of the stool the pupal bed where a Goat Moth caterpillar had pupated, and the exit hole by which the moth had issued. A third specimen contained a full-grown caterpillar preparing for pupation below



Fig. 49.—Tunnel of caterpillar of *C. ligniperda* in longitudinal section.

The tunnel is filled up with the mycelium of the fungus *Agaricus melleus*. Fungus attack had followed the insect attack, the fungus taking advantage of the caterpillar borings to spread through the wood. (From nature.)

the larch bark. In due course this caterpillar pupated, and I bred out the adult. The specimens were so interesting that



Fig. 50.—Cocoon of *C. ligniperda* under bark of old Larch.

(Natural size; from nature.)

a careful examination was made, but no larval borings were found in the larch. The caterpillars had fed in neighbouring broad-leaved trees—their galleries were found—and had left

these trees on being full grown, and had bored below the larch bark for pupation. The caterpillars of the Goat Moth, instead of pupating at the end of their galleries, sometimes—as in this case—leave the host tree and pupate elsewhere. I have taken their cocoons in garden soil close to the trees that had been destroyed by them.

THE GHOST SWIFT MOTH (*Hepialus humuli*).

This moth is found over Britain from north to south. It measures from $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in spread of wing. There is a marked colour difference between the male and the female. All the four wings of the male are usually silvery-white, although the hind pair may be greyish. The fore-wings of the female are broader, and are yellow, with orange or brown-red markings; the hind-wings of the female are greyish and tinged with red at the apex. The female varies somewhat in colour, and there is in Shetland a variety in which the colour of the male approaches that of the female.

The caterpillar measures $1\frac{1}{2}$ inches when grown and extended; in colour it is whitish or pinkish-white, with black spiracles; the head is red-brown, as is also a horny plate on the joint behind the head; there are dark dots on the upper surface of the segments of the body, from which stiff hairs spring.

The pupa is dark-chestnut in colour, with black spines on the under surface. It is enclosed in a slight cocoon, and lies in the soil near the surface.

Life History.—Chapman and Barrett both describe the habits of the moth. The moths fly in the gloaming; the male, ghost-like and conspicuous by its silvery-white colour in the dusk, chooses a place and hovers for a short time backwards and forwards, "swaying like a pendulum over a surface of about a yard," in order to attract the female. Sometimes the male is alone; sometimes there are several males in company. The female, not yet fertilised, flies towards a male and intentionally touches or knocks up against the male, which at once ceases its swaying and drops to the ground, where pairing takes place. The fertilised female flies away, discharging her eggs as she flies.

The caterpillar which hatches feeds from July till the next April or May at least, when pupation takes place. The pupa



Fig. 51.—Empty pupa case of *Cossus ligniperda*.

(From nature.)

escapes from the cocoon just before the emergence of the moth, and by means of its spines wriggles to the surface.

The caterpillars of the Ghost Swift Moth feed underground.

In the literature there are records of damage to oats, potatoes, artichoke, carrots, asparagus, and hops. Caterpillars are also found at the roots of burdock, nettle, and docken. I have no record of damage to young forest plants, but in January the

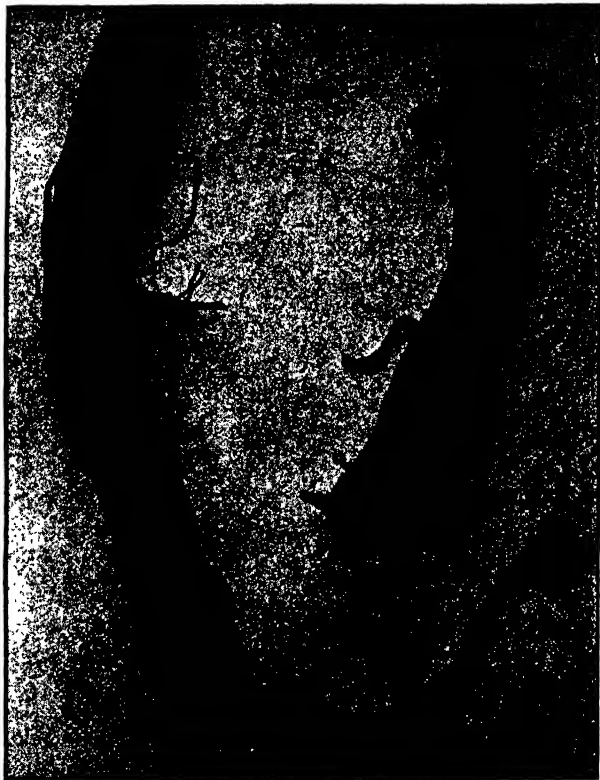


Fig. 52.—Ash seedlings gnawed by caterpillars of *Hepialus humuli*.

(From nature; natural size.)

caterpillars were sent to me as "causing terrible havoc in a bed of two-years' seedling ash, eating these off on a level with or just under the surface of the ground." The damaged plants are shown in Fig. 52. Very careful search was made for other enemies, but none were found.

Treatment.—This is difficult, as the caterpillars feed under cover in the soil. The use of vaporite, this being incorporated

with the soil, has been attended with some success. Some good can be done by trapping, pieces of potato being placed in the soil as bait. Where the cultivation of the crop allows, the soil should be worked to disturb and turn up the caterpillars.

THE SCALLOPED HAZEL MOTH (*Odontoptera bidentata*).

The caterpillars of this moth feed on a number of different broad-leaved trees, including rosaceous fruit-trees. I have also a record of damage to larch. In the case under notice they

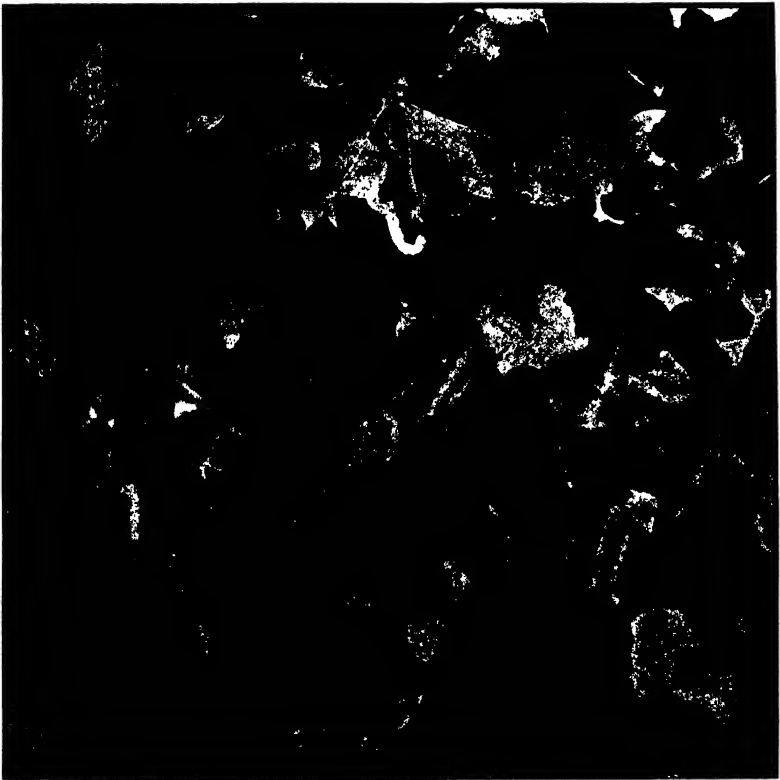


Fig. 53.—Ivy with caterpillars of *Odontoptera bidentata*.

(From nature.)

proved destructive on ivy and rhododendron. The moth flies in May and June, and the winter is passed in the pupal condition. The females lay their eggs in clusters on twigs; the eggs are turquoise-blue at first, but later they turn red-brown. The caterpillars are loopers or geometers; they have 14 legs—viz., a

pair each on rings 1, 2, 3, 7, 8, 9, and 12—but the legs on rings 7 and 8 are stunted and of little or no use, therefore in walking the caterpillar arches its body and moves as if measuring out the twig or leaf with compasses. The caterpillars taken by me from ivy fed willingly (in confinement) on the leaves of apple, and pupated in September. The adult moths began to come away on 9th May, three appearing on that day.

The caterpillars are protectively coloured, and when at rest are not easily observed on the food-plant.

The body of the caterpillar is somewhat slenderer towards the head end. The colour is most variable, grey, green-grey, brown, with a row of diamond or lozenge-shaped markings down the back; a dark longitudinal line may show in the region of the spiracles; the spiracles are white, with dark border; head, brown or yellow-brown; length of caterpillar, $1\frac{3}{4}$ inches.

The caterpillar cannot be termed a pest, but where it is present in destructive numbers spraying the infested plant with arsenate of lead would be a good measure; the caterpillars eating the sprayed leaves would be poisoned.

HYLASTES PALLIATUS Gyll.

This bark-boring species has in the past year proved destructive to Scots Pine, aiding and abetting the damage being done by *Hylurgus* (*Myelophilus*) *piniperda*.

There is some difference of opinion as to the forest importance of *Hylastes palliatus*, the tendency being to minimise its importance. From what I have seen of its work in different parts of Scotland, I lean to the opinion that it plays a considerably more important part as a destroyer than is suspected. I have found it on other occasions working alongside different species; in the summer of 1913 it came to me in Scots Pine along with *piniperda*. The attacked trees had been green and—to the eye—healthy in spring, and yet by midsummer they were brown and withered. The unfavourable situation of the trees was partly accountable for their ill-health; but their death was greatly hastened by the onset of *H. palliatus*.

H. palliatus is a small beetle measuring about an eighth of an inch and over in length. The thorax is broader than long—a character that helps to mark it out from its nearest allies—and has a distinct glossy raised line or keel running longitudinally down its middle; the beetle is brown-red on its upper surface, with the head and edges of the wing-covers darker; the wing-covers show, on examination with a lens, fine longitudinal lines, between which are spaces that have rows of little knobs and fine hairs.

The grubs are legless, and are yellow-white in colour, with brown heads and biting jaws. The grubs infest the inner bark of pine, spruce, and larch, and more rarely silver fir.

The first beetles appear in April. They bore into the bark, pairing having taken place, and the mother gallery begins in a more or less irregularly hollowed-out part, often resembling in shape a boot or the end of a crutch. From this the female eats out a gallery, running, in the long axis of the tree, for a distance of $1\frac{1}{2}$ to 2 inches. Along the sides of this gallery eggs are laid. When the grubs hatch they gnaw out tunnels for themselves, long and often crossing one another, so that a sort of network appearance results.

The full-grown grub becomes a pupa in a little bed hollowed out in the bark, or sometimes in the very outermost wood-ring. The new beetles, when ready, eat their way to the outside, each escaping by its own bore-hole.

The health of the tree is sapped by the numerous beetle and larval borings in the living part of the bark and the cambium.

There can be two generations in the year, as proved in my experiments. The April beetles give rise to a brood which issues in summer, and the earliest beetles of the summer brood can proceed to egg-laying, with the appearance of some of the next brood in autumn of the same year.

The best method of keeping down the numbers of *palliatu*s is to prepare a series of trap stems from the end of March onwards. The preparing of these trap stems—which are stems in ill-health felled and allowed to lie as lures which *palliatu*s will use for brood purposes—must not be limited to April and July and October, but should be first prepared at the end of March, and be continued at intervals till October. Each trap-stem or unbarked log should not be allowed to remain longer than, at the most, six weeks, as in summer a cycle from egg to adult may be completed in eight or nine weeks. Of course the life-cycle takes longer in the colder parts of the year, and in winter growth is stopped altogether. The winter may be passed in the stage of larva or pupa, or young beetles still in their beds, or older beetles that have been in the open but have gone into winter quarters. I have taken adults in the open in every month of the year from April to October.

Trees that are in ill-health and dying should not be allowed to remain in the wood (unless as traps), otherwise they will serve as nurseries for many broods of the beetle.

THE BEAN BEETLE (*Bruchus rufimanus*).

Numbers of this beetle come into Scotland every year in imported beans. I have never any difficulty in finding in-

infested beans, especially in what are known as the Seville and Aquadulce varieties.



Fig. 54.—*Bruchus rufimanus*.

(Greatly enlarged. The beetle in actual size is less than $\frac{1}{4}$ inch.)

The beetles lay their eggs on the very young pods in the fields, and the grubs on hatching bore through into the bean. Several grubs may be found in the same bean. The full-grown grub pupates in the bean. If the infested beans are examined in winter or early spring a small round mark will be seen, consisting of a thin skin through which the beetle will push itself on emergence.

A closely allied species, *Bruchus pisi*, has similar habits, but in pea. Infested peas are not, however, so commonly on sale.

The best mode of killing the pest is fumigation with bisulphide of carbon, as described earlier in this report. The fumigation



Fig. 55.—*Work of Bean and Pea Beetles.*

(From nature.)

should take place as soon as the infested beans or peas are received.

TRICHIOSOMA LUCORUM.

The section of Hymenoptera known as Sawflies (*Tenthredinidae*) contains some species that are common and well known

in Scotland—for example, the gooseberry and currant sawfly, and the two species of pine sawfly. The large larch sawfly has also, in the past three or four years, been found at work in several counties; and there are some gall-makers—*e.g.*, the common *Nematus (Pontania) gallicola* of the willow. Not so well known is a group of sawflies whose adults are distinguished by having the ends of the antennæ swollen and club-like. Nearly every year queries reach me regarding a species whose caterpillars feed on birch leaves, and whose large tough

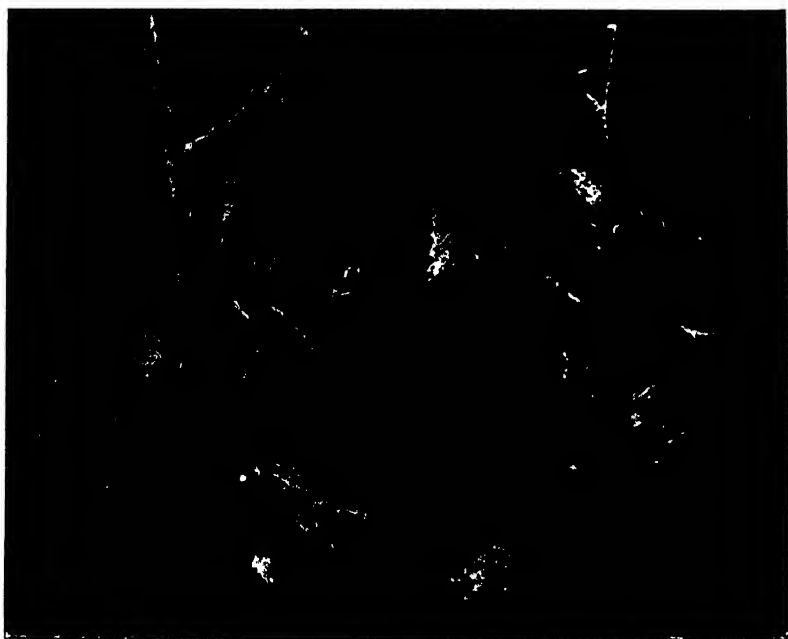


Fig. 56.—*Cocoons of Trichiosoma lucorum on Birch.*

(From nature; reduced.)

cocoons, attached to the twigs, call attention to the species. This birch insect is *Trichiosoma lucorum* L. The adult measures from half an inch up to nearly an inch; the larva is a striking twenty-two-legged caterpillar, which feeds in summer and early autumn on birch. The insect may be described as common in Scotland, but though the cocoons are sent there has never been complaint of serious injury. Fig. 56, a photograph from nature, shows the cocoons *in situ* on birch twigs; adults have issued, and the lid-like tops of the empty cocoons are well shown.

THE WOOLLY APHIS OF THE APPLE (*Schizoneura lanigera*).

This exceedingly troublesome insect, recognisable by the tufts of cottony or woolly material that cover the insects, attacks not only the stems and branches but also infests the roots. Owing to the wounding of the external tissue, and the draining away of the sap by the introduced beak of the feeding aphides, galls result on stem and branch and roots; later, the swellings crack and the familiar canker-like appearance is produced.

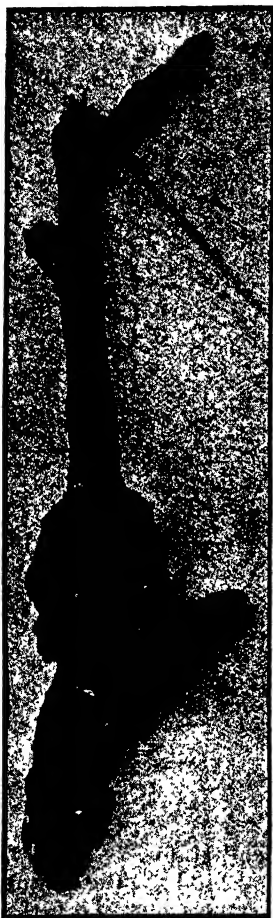


Fig. 57.—Damage due to *Schizoneura lanigera*.

For the great part of the year only females are present; for some time all the females are wingless, but as the season goes on winged females may arise which spread the infestation. Both wingless and winged females produce live young. As the autumn runs on, males and females are produced, pairing takes place, and the fertilised female lays a single egg.

The generations can be continued in the next year in one of two ways. The fertilised eggs overwinter and hatch in the next spring, the young all developing into females which produce live young. Or, apart from the sexual individuals, virgin females may overwinter in shelter places, to give birth to live young in the next spring.

An important point to keep in mind as regards treatment, is that while the above-ground stem and branches may be sprayed and seemingly cleaned of the enemy, unless the roots are also treated—the removal of some soil from the base of the tree and the exposure of some

roots will show whether the root-infesting forms are present—the above-ground parts may again be attacked by individuals that migrate from the roots of the trunk. The passage from stem to root and from root to above-ground parts has been known now for a number of years.

Trees infested with Woolly Aphis should be sprayed in winter with the soda-emulsion wash recommended by Mr Pickering of the Woburn Experimental Fruit Farm. The formula is—

Iron sulphate	½ lb.
Lime	¼ lb.
Caustic soda	2 lb.
Paraffin (solar distillate)	5 pints.
Water, to make	50 gallons.

How to prepare the Wash.—Dissolve the iron sulphate in about 9 gallons of water. Slake the lime in a little water, stirring well and adding more water to make a "milk." Next run this milk of lime into the iron sulphate solution, through a piece of sacking or a fine sieve to remove grit or coarse particles. Then add the paraffin, and churn thoroughly. Just before using add the caustic soda in a powdered form. This wash must be applied only when the trees are dormant. The face, eyes, and hands of the sprayer should be protected.

Against the root-infesting forms¹ the best treatment is fumigation with bisulphide of carbon. This should be injected into the soil in four places about two feet away from the trunk of the apple-tree. For each injection one fluid ounce of bisulphide of carbon is sufficient for a good-sized tree. The liquid bisulphide of carbon must not touch the roots, else these will be injured. The bisulphide of carbon vaporises, and the vapour—which kills the insects—is harmless to the roots.

It is possible that further research will reveal an even more complex life-history for the Woolly Aphis of the apple, and that it may be shown that two host trees of different species play a part in the life-history.

Mr Thomas R. Hewitt, of the Royal College of Science, Dublin, in the number of the 'Journal of Economic Biology' for July 1913, has given an interesting account of his finding this Woolly Aphis in the cores of "Newtown Pippin" apples from California. Out of seven apples examined, the aphids—adults and young—were alive in three.

THE PEAR LEAF BLISTER MITE (*Eriophyes pyri* Nalepa).

This minute mite, a close ally of the mite which is the cause of "big-bud" in currants, measures only up to $\frac{1}{16}$ inch long. It attacks pear leaves and young pear fruits. Attacked fruits may die away, or if they persist, remain stunted. Infested leaves show little raised blisters on the upper surface with a very small opening on the under surface; the blisters, at first

¹ See Leaflet No. 34 of the Board of Agriculture and Fisheries.

greenish and then reddish, become after some time brown or brown-black, a number fusing to form patches. If some of the brown material be scraped off and examined on a slide under the microscope, the mites may be seen in numbers; they have piercing and sucking mouth-parts, 2 pairs of 5-jointed legs, and an elongated ringed abdomen.

The mites hibernate under cover of the bud-scales of the buds of the shoots of the year. In spring the leaves are

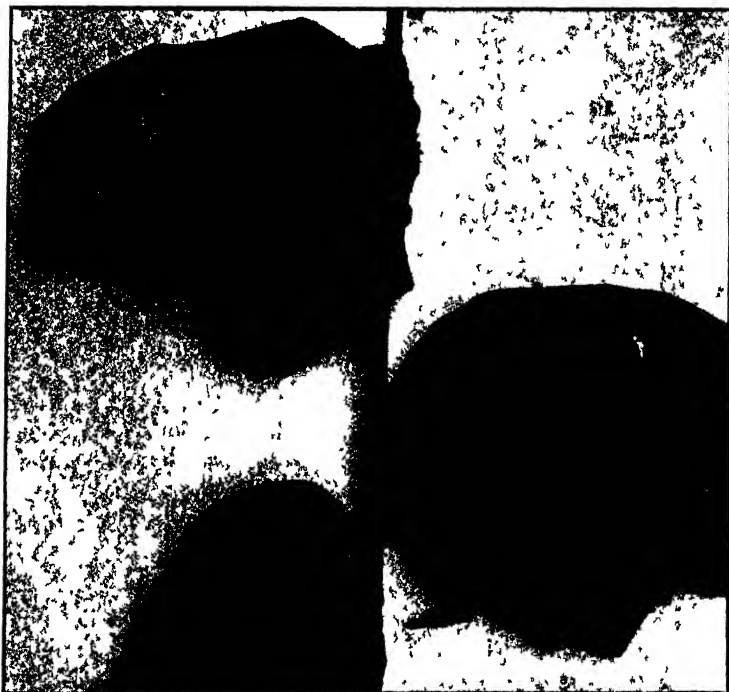


Fig. 58.—Work of *Eriophyes tristriatus*, var. *erineum*, on Walnut.

(Natural size)

punctured and galled, eggs being laid in the gall. Previous to leaf-fall the mites pass to their winter quarters in the buds. The galled leaves fail in their work, with a consequent failure of the fruit crop.

Treatment.—Collect and burn the blistered leaves when attack is first noticed, and is on a small scale. Prune away and burn shoots whose leaves show the blisters. In any severe attack there should be two sprayings—one in winter and one

in spring. The winter wash should be lime-sulphur-soda-salt. Theobold's formula is—

Quicklime	.	.	.	.	3 to 6 lb.
Sulphur	.	.	.	.	3 lb.
Salt	.	.	.	.	3 lb.
Caustic soda	.	.	.	.	1 lb.
Water	.	.	.	.	10 gallons.

The lime and caustic soda should be mixed together, and then slaked with some hot water in which the sulphur has

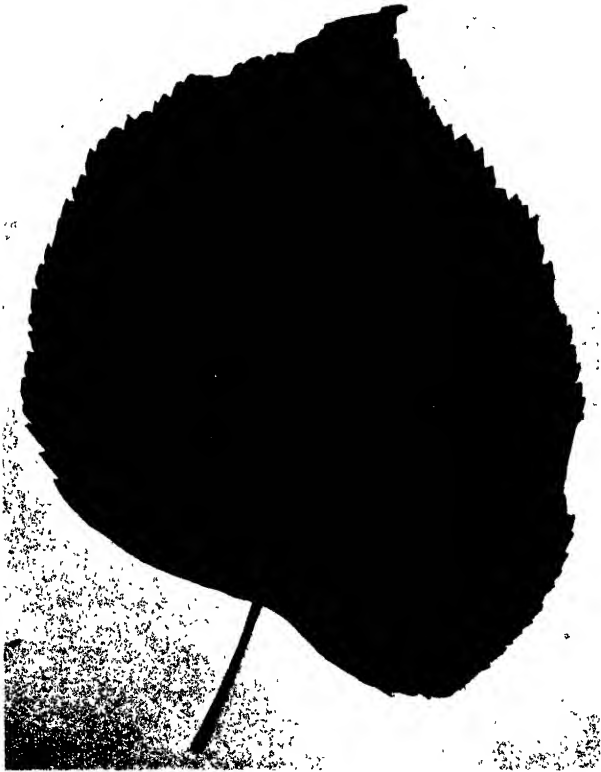


Fig. 59.—Galls of *Eriophyes tiliae*, var. *liosoma*, on Lime.

(From nature.)

been mixed; then add water to bring up to 10 gallons. This wash should be applied before the buds have burst—say in January or February—to be followed in spring with a weak paraffin emulsion wash.

A paraffin emulsion spray, as soon as the leaves have fallen, would be sure to reach mites not yet in the shelter of the buds.

Eriophyes pyri also attacks apple; white beam tree (*Pyrus aria*); wild service tree (*Pyrus torminalis*); rowan; and *Cotoneaster vulgaris*, a garden Rosaceous plant.

Another Eriophyid—viz., *Eriophyes tristriatus* var. *erineum*—gives rise to blisters on the leaves of the walnut-tree (Fig. 58).

A third Eriophyid, on the leaves of the lime tree (Fig. 59), has come to me three years in succession. The species is *Eriophyes tilia* var. *liosoma*. The presence of this mite is indicated by little collections of yellow-white or reddish mossy-like hairs. These may be on either surface of the leaf, and are on the veins, which can be slightly thickened in consequence.

LICE ON DOGS.

Two kinds of lice are found on dogs—sucking lice of the genus *Hæmatopinus*, and “biting” lice of the genus *Trichodectes*. Of these, *Hæmatopinus* is far the commoner. *Hæmatopinus piliferus* is the troublesome species; it is found specially about the shoulders, the loins, and the base of the ears. *H. piliferus* measures from $\frac{1}{8}$ th to $\frac{1}{6}$ th of an inch in length; its colour is red-yellow or grey-flesh colour; the abdomen is very hairy, and on magnification a number of small tubercles are seen. The females fix their nits or eggs to the hair; the young forms on hatching resemble the parent in outward appearance, but they are smaller and not sexually mature; they feed, and after several months reach the adult condition without any resting stage.

Treatment for Lice.—A creolin bath is effective. The creolin should not be of greater strength than 1 to 2 per cent (a strength exceeding 2 per cent is dangerous), and should be rubbed into the skin, the treatment being repeated after five or six days. Objections to creolin are the smell in the case of pet dogs, and the risk of poisoning from skin absorption, for if used in too great strength over a large area of the skin it acts as a narcotic and irritant poison, both to dog and cat. The strength suggested above would be safe, except perhaps for delicate lap-dogs.

The following, used as a soap, is recommended as effective by my colleague, Professor Gofton:—

Strong mercurial ointment, $1\frac{1}{2}$ oz.

Lard, 4 oz.

Soft-soap to 1 lb.

Two dressings should be given at intervals of about a week. If this mercurial soap be used, care should be taken to prevent the dog from licking or biting itself, because of the poisonous dressing. Whatever the dressing, clipping is of material assistance, especially in thick-coated dogs.

THE BANK VOLE (*Arvicola* or *Microtus glareolus*).

Rats and mice and voles are sometimes not clearly distinguished, and their common names sometimes lead to confusion. The true rats and mice belong to the family Muridæ, the voles to the family Arvicolidæ. The two families may be distinguished by the following external characters:—

MURIDÆ. <i>Rats and Mice.</i>	ARVICOLIDÆ. <i>Voles.</i>
Muzzle pointed.	Muzzle rounded.
Ears large and prominent.	Ears short, almost hidden in the fur.
Tail long, naked, scaly.	Tail short, and it may be hairy.

In Scotland there are three voles—namely, the water-vole, commonly, but unfortunately, named the water-rat (*Arvicola amphibius*); the short-tailed field vole (*Arvicola* or *Microtus agrestis*); and the bank vole.

The water-vole works underground, and is common along the banks of streams, but is also found at some distance from water in meadow, field, and forest. It is a good diver and swimmer. It is destructive to roots of agricultural plants and young forest trees.

The short-tailed field vole can be very destructive on pasture land, not only at low levels but on upland and hill pastures. It is also a severe enemy in forest nurseries. It is not a great climber like the bank vole, its damage to trees being not far from the ground.

The bank vole, as regards head and body, is rather smaller than the last species, with a proportionately longer tail (its tail is half the length of its body; in *agrestis* it is only one-third the length of the body). The ears of the bank vole are also more prominent above the fur, and its eyes are more conspicuous. The bank vole is red or red-brown, or chestnut-coloured on the head and back; the flanks are greyish; the under-side and the feet are white; the tail is very hairy.

The bank vole is harmful in field and forest, and complaints have reached me of the havoc it has wrought in a garden to the bulbs and corms that had been planted for spring flowers. It is found in sheltered situations, the edges of woods, sheltered banks near plantations, and in hollows among the roots of trees. This species climbs high and well, its barking of young trees being found to a height of three and four yards, or higher.

In the garden infestation trapping gave good results. Successful baits are cheese, bread crust, and soaked peas. Harting recommends, in addition, the scattering of some hemp seed about the entrance of the trap as a successful bait.

TALL OAT-GRASS.

By PROFESSOR A. N. M'ALPINE, Glasgow, Consulting Botanist to the Society.

Introduction.

IT lies in the very nature of things that the grasses cultivated on the farm need to be regarded as closely and inseparably connected with the live stock reared by the farmer. The grasses feed and sustain the live stock; through their excrements, the live stock in turn give food and sustenance to the grasses. Accordingly good and profitable management of the live stock calls for good and profitable management of the grasses so closely associated with them. These two parts of a single whole have to be so balanced and so proportioned, so adapted and so managed, that the maximum profit accrues.

This intimate connection between grasses and live stock is very apt to be hidden from the farmer by the difference of names. Yet is it not a fact that grasses, just like live stock, feed and drink, breathe and grow, propagate and reproduce, have health and disease, life and death? Clearly, then, grasses are genuine live stock, only they are of a different sort from the cows and the sheep and the horses. These latter constitute the locomotive or animal portion of the stock; they move about, while the no less living grass-plants are stationary, fixed and rooted in the ground. To them our animals must needs come for their daily food.

Special Points for Consideration.

Regarding grasses as neither more nor less than stationary live stock, whose only purpose is to provide nourishment for the animals, we gain at once a firm grip of the main agricultural questions that are involved when the farmer's attention is directed to any special grass.

1. Is the grass in question to be looked upon merely as vermin and as a weed to be got rid of, or is it rather worthy of cultivation, and if so, for what purposes? The answer to this first question is given under the heading AGRICULTURAL VALUE.

2. In what situations and under what circumstances is this particular grass most at home? In other words, where and how does it thrive best, give the best yield, and live longest? The answer is given under ECOLOGY.

3. At which stage of growth, and in what form, is the grass to be introduced to our farms? Here it is manifestly of prime importance that nothing of a dangerous nature may enter along with the grass, and that what we purchase for our use be well calculated to effect our purpose. Such matters are dealt with under the heading **THE SEED OF COMMERCE AND ITS IMPURITIES**.

4. How many millions of these grass-plants can a single acre carry with profit? If too few are introduced, we are evidently understocking our valuable land, and even inviting the entry of dangerous weeds; whereas, if we introduce too many—that is, if we overstock the land—the one plant will interfere with the growth of the other, and, as before, the result is a poor and unprofitable yield. For the answer to this question, see the heading **SEED AND AMOUNT PER ACRE**.

5. How does the grass behave as it grows and develops on the land year after year? See **GROWTH AND YIELD**.

6. Is the grass best grown by itself, or is it preferable to grow it in mixture with other grasses? See **MIXTURES**.

7. When the grass is growing in the pasture, how shall we recognise and distinguish it from the associated grasses? See **NAMES AND DISTINGUISHING FEATURES**.

1. AGRICULTURAL VALUE.

In pastures on land inclined to be light and dry, rather than heavy and wet, tall oat-grass produces numerous shoots, with copious ground-leaves which are readily browsed by stock. In the second year of its growth the grass has reached full yielding capacity, and this productiveness is maintained for four or five years in succession. This fact, of high pasturage value on light soils, has hitherto failed to obtain the recognition it deserves. Another valuable property of tall oat-grass is that it commences early and leaves off late. It is yielding herbage early in the spring, and is continuously renewing foliage till checked by winter frosts.

For hay production also the grass is valuable, since it often yields two good crops in a single season, and surpasses Italian ryegrass in that this high yield is kept up for three or four years. The individual straws, richly clothed with leaves, stand erect to a height of three feet or more. The hay dries readily and keeps well.

Tall oat has been tried on moorlands, but with doubtful success.

2. ECOLOGY.

Tall oat-grass thrives best—is most *at home*—on sandy loams, on loams, and on marls. Where the soil is too heavy and stiff the fibrous roots do not find scope for their full downward extension and development; stunted plants are the result. Too much water, or, again, excessive poverty in the land—especially its poverty in nitrogenous minerals—may also be responsible for stunted effect. Even on land liable to drought, the numerous fibrous roots can pierce downwards into the deeper layers and find there a water-supply sufficient to keep the plant green and to maintain its growth during the droughty period.

The grass is native to Britain. It grows wild, literally from Land's End to John o' Groats. It is found on our Highland hillsides even to an altitude of 1300 ft. It haunts the hedgerows and shady wood borders, steep ravines and rocky *débris*. It also occurs naturally in good pastures and meadows on light land, and on the margins of arable fields. The farmer may take it as a general rule that tall oat-grass is likely to succeed wherever he is pestered by that troublesome weed "Pearl-grass" or "Onion Couch." The wide distribution of tall oat brings forcibly home to us the hardy character of this grass, and its prevalence in dry situations demonstrates its drought-resisting qualities.

3. THE SEED OF COMMERCE AND ITS IMPURITIES.

As yet the farmer does not seem to have sufficiently grasped the fact that in the purchasing of grass seeds the important thing is to make sure that all is well with the embryo plant enclosed and perfectly hidden within the seed. He often forgets that it is live stock he is buying and paying for. It is this tiny embryo whose presence is required: without the embryo no grass plant can be produced. This embryo the farmer cannot see, for it is only $\frac{1}{20}$ in. long and $\frac{1}{30}$ in. broad. This tiny body needs to be alive and healthy, and capable of growing up into a grass plant when he puts the seed which contains it into his land. Weight and appearance go for naught if the healthy embryo lies not within. To the farmer every seed is a "pig in a poke"—or rather, a pig in a poke within a poke. For the embryo plant is inside the "seed"-poke number one; and the "seed" is inside the husk-poke number two. But then these pokes may at times contain nothing of importance; the embryo may be wanting, and the so-called seed a mere *husk* or chaff incapable of producing a plant.

When, buying the seed of tall oat-grass, at 9d. or 10d. a

pound, the farmer has to be specially careful. Sometimes a large percentage of the seeds purchased are without their healthy embryos, and even in the best seed only 90 per cent ever grow up. The way to secure what the farmer wants is to get a written guarantee along with his seeds, not only of their germination but of their purity as well, both stated as percentages. The percentage of germination gives him the necessary information, not about his seeds as a whole, but only about that portion of them which contains embryos; the percentage of purity, on the other hand, tells him what he needs to know about the seeds as a whole—viz., the proportion of empty husks and other impure ingredients purchased along with the real seeds.

A good sample of tall oat ought to have a germination percentage of 80 and a purity percentage of 95. The *real value* is got by multiplying together the two percentages and dividing by 100. $\frac{95 \times 80}{100} = 76$. The real value then is 76 per cent.

The very best seed purchasable has a real value of 93 per cent. A bushel of tall oat seeds weighs from 14 to 16 lb., and 1 lb. contains 138,000 seeds. Hence 1,000,000 germinating seeds would cost about 7s. Yet one buys perennial ryegrass seeds at 1s. 3½d. per million. It is this comparative dearth which often deters the farmer from using tall oat-grass as freely as he might.

The common impurities of tall oat seed are chaff and bromes (*Bromus erectus* and *Bromus secalinus*). On the whole, thanks to the seedsman, the seeds are usually almost free from seeds of weeds.

4. SEED AND AMOUNT PER ACRE.

It is in the form of seed that the farmer introduces grasses into his land. Granted that the effective or *real value* of the seed to be introduced is known, the problem now is to find the right rate of sowing if we would stock an acre to the best advantage with tall oat-grass plants alone and free from admixture, so as to get the largest possible return per acre. As we shall see when treating of mixtures, it is rarely advisable in practice to cover an acre entirely with this grass. This is, however, done for purposes of experiment, to find out by actual trials how many pounds of the seed are required to cover a whole acre; then we can know approximately what we are doing when we sow in our mixtures (say) 6 lb. of tall oat seed. Or, again, we may be asking, how many pounds should we sow when we think it advisable to stock only one-twentieth of an acre (5 per cent) with tall oat plants, leaving the rest of the acre for the other components of our mixture?

Experiment shows that 40 lb. of effective seed are necessary to cover one acre to the best advantage with tall oat plants. But certain considerations which cannot be dealt with here lead us to modify this amount when we are dealing with complex mixtures. The general rule for mixtures is: *Add 50 per cent to the amount of effective seed required for a pure sowing.* On this basis, then, 60 lb. per acre of tall oat seed are required when dealing with mixtures—that is, $8\frac{1}{2}$ million seeds. For a cultivated oat, say potato oat, 3 million seeds suffice.

We are now in a position to answer our two questions: 1. What are we doing when we include 6 lb. of tall oat seed in a mixture for one acre? The answer is, we are covering, or intending to cover, one-tenth (10 per cent) of the acre with tall oat plants—for 60 lb. would cover the whole acre. 2. How many pounds of tall oat seed should we sow to stock one-twentieth (5 per cent) of an acre? The amount required is 3 lb.—i.e., one-twentieth (5 per cent) of the 60 lb. required for the whole acre.

5. GROWTH AND YIELD.

The seed of tall oat is comparatively large ($8 \times 1\frac{1}{2}$ mm.)—nearly the same size as that of the potato oat. Hence it can be covered to a depth of one or two inches without detriment. The embryo plant within the seed begins to grow. Soon it emerges from the husk and pierces through the ground. It has now become a robust seedling, ready to make the fullest use of its surroundings. The seedling rapidly develops into a young plant, with loosely tufted shoots. Bundles of fine fibrous roots extend downwards from the shoots, and penetrate into the deeper layers of the soil in search of the water and other necessities of life which they find there. So quickly does the plant develop that even in the first year of growth a large crop of hay is yielded. Karmrodt, for instance, obtained three tons of hay per acre from an experiment plot of tall oat-grass during the first year of its growth. Rapid and early growth and development are indeed the most characteristic agricultural features in the life of the tall oat-grass, and along with this we have, as already noticed, hardihood and drought-resisting power.

One reason for never growing this grass pure (unless for seed production), but always in mixture, is to be found in the loose disposition of the shoots. It is advisable to fill up the gaps between these shoots, and the accompanying grasses serve this purpose, forming a complete sward of grass.

During the second year of life the yield of hay is more than doubled, and this high yield is maintained during the third year. The fourth year marks the beginning of its decline, and

by the end of the sixth year the grass is to a very large extent dead. By reason of this growth persisting for three or four years, tall oat-grass is more useful than Italian ryegrass, when a ley of longer duration than one year is desired on land of a light type.

Tall oat-grass responds very readily to liquid manure, and, as Wollny has shown, the yield of green herbage may be almost doubled by an application of 660 gallons of liquid manure per acre. The unmanured plot in Wollny's experiment yielded 4 tons 8 cwt. of green herbage, the manured plot 7 tons 2 cwt. By judicious applications of liquid manure the longevity of the grass also is increased, and probably the nutritive value as well.

6. MIXTURES.

For pasture purposes various seed mixtures have been tried at the West of Scotland Agricultural College Experiment Station. Here is the best prescription we have been able to devise:—

Names of the Plants included.	Percentage of Ground occupied by each Species in Seed Mixture.	Weight per acre of each Seed in Mixture.
Red Clover	10	lb. 2·3
Alsyke Clover	10	1·4
White „	10	1·2
Italian Ryegrass	10	5·5
Timothy	10	2·1
Meadow Fescue	5	2·8
Tall „	10	4·0
Cocksfoot	10	3·3
Tall Oat-grass	10	6
Perennial Ryegrass	10	6
Crested Dogtail	5	1

7. NAMES AND DISTINGUISHING FEATURES.

The names commonly applied to this grass are: false oat-grass, tall oat-grass, French ryegrass, and non-bulbous false oat.

The word *false* refers to the fact that although superficially the spikelets of the ear resemble those of the cultivated oat, nevertheless the structure is essentially different. For the lower flower of the spikelet has merely a rudiment of the female organ (pistil), and, unlike that of the true oat, this

lower flower has become a mere male incapable of producing seed; so that although there are two flowers per spikelet, only one seed can be produced from one spikelet.

The word *tall* reminds us that the straw attains to a height of 3 or 4 feet.

Again, the name *French ryegrass* is not inappropriate, since this grass naturally abounds in the S.-E. parts of France, and when cultivated there takes the place of our ryegrass.

Non-bulbous false oat is a useful name, helping to prevent confusion with that pestilent weed, the plague of light arable land, known as pearl grass, knot grass, onion couch, and *bulbous false oat*. This weed is easily distinguished. The knots on the straw are hairy, not bald; and the underground parts of the shoot (the internodes) are specially thickened into rows or chains of "pearls" or "bulbs." Each "pearl" serves to propagate the plant, whereas tall oat can be reproduced only from seed. Those parts of the pearl grass that rise above the ground are drained of their nutriment to fill up the propagating "pearls," whereas tall oat retains the nutriment sought for by the browsing animals in its accessible ground leaves, and is thus a plant of value.

The botanical names of tall oat-grass are: *Avena elatior*, L.; *Arrhenatherum Avenaceum*, Beauv.; and *Arrhenatherum elatius*, M. & K.

We may now, in conclusion, sum up the leading characters by which tall oat-grass may be recognised and distinguished when growing in a pasture mixed with other grasses. We must attend solely and exclusively to the ground leaves.

1. The blades of the leaves are comparatively broad—*i.e.*, the plant is a top grass like timothy, not a bottom grass like perennial ryegrass.

2. The young blades are rolled up, not folded as in cocksfoot.

3. The ribs on the upper surface of the blade are low and flat as in timothy, not prominent and acute as in the fescues.

4. The margin of the blade is not toothed, whereas timothy has a finely-toothed margin.

5. The leaf-sheath is bald and split, not hairy and entire as in the brome grasses.

6. The ligule appears dotted when held up to the light, because it has fine hairs on the back. The ligule of timothy is not dotted, and is bald on the back.

THE FEEDING VALUE OF PASTURES. AN EXPERIMENT WITH DIFFERENT GRASS-SEED MIXTURES.

By PROFESSOR JAMES HENDRICK, B.Sc., F.I.C., and
WILLIAM M. FINDLAY, N.D.A., University of Aberdeen.

MANY experiments have been carried out in various parts of the United Kingdom during the past few years, by private individuals, agricultural societies, and agricultural colleges to test the value of various grass-seed mixtures. One of us has carried out many such experiments in connection with the work of the North of Scotland College of Agriculture. In the experiments hitherto carried out the value of the different mixtures has almost invariably been judged by the weight of hay yielded or by the appearance of the herbage in the pasture.

Against all such experiments the objection can be urged that the methods of estimating the results are not reliable, and that at least some investigations by more laborious and trustworthy methods require to be made to check them. The weight of hay yielded by a plot is no true indication of the value of the crop grown on that plot. In no case is weight alone a complete measure of value, but in the case of a crop like hay, which consists of a mixture of several different kinds of plants, weight may have little relation to the value of the crop, which will depend largely on the botanical composition of the mixture and on the quality of the herbage composing it. Still more inadequate is the method of weighing hay when we wish to measure the value of the crop on land kept in pasture for several years, for in this case it is not hay which is being grown, and the character of pasture-grass is quite altered when it is allowed to grow to hay.

As to the method of judging the result by mere inspection, it is obviously quite inadequate, if only because of the impossibility of eliminating the conscious or unconscious bias of the observer. It is a makeshift to be adopted only when no other method is available.

Even chemical analysis of the hay or grass obtained, added to determination of weight, does not provide an adequate measure of value, for, as has often been shown, bad grasses, which are looked upon as weeds in a pasture, give as good, or nearly as good, an analysis as good grasses. Our methods of analysis of

feeding-stuffs are still far too imperfect to be of much use in this case, and the best method at present available seems to be that of feeding stock on the pasture and estimating its value by determining its power of feeding farm animals. This is the method which has been successfully applied to determining the improvement made in poor pastures by the application of manures in such well-known experiments as those carried out at Cockle Park in Northumberland, and by this Society in different parts of Scotland.¹

Plan of the Experiment.

The experiment described in this paper was carried out at Phesdo, Fettercairn, on a field provided through the kindness of Sir John Gladstone, Bart. of Fasque. The experiment was originally arranged by Mr R. B. Greig, then Fordyce Lecturer in Agriculture in the University of Aberdeen, now a member of the Board of Agriculture for Scotland, and Mr Alexander Dewar, then factor to Sir John Gladstone, now a member of the Land Court, to whom the credit of its inception is due. A field of twenty-four acres was provided by Sir John Gladstone, through Mr Dewar. This consists of fertile red loam on the Old Red Sandstone, and is well sheltered and well watered.

This field was divided into four plots, each of six acres, and each with access to water. The field was laid down to grass in 1909, but there was a very heavy oat crop which injured the grass, so it was ploughed up and again laid down with another oat crop in 1910. The seeding this time was successful, so the experiment began with the hay crop in 1911.

In both 1909 and 1910 the four plots were sown with the same grass-seed mixtures. The mixtures used are shown in Table I.

The mixture used on Plot I. is similar to that used by many farmers in the north-east of Scotland. In it perennial rye-grass predominates. On Plot II. there is much less rye-grass but much more cocksfoot and timothy, while on Plots III. and IV. there is no rye-grass. All the plots got the same seeding of clovers, and the comparison was confined entirely to the different grasses used.

It was determined to hay the whole field in the ordinary way in 1911, and after that to fence the different plots and graze them for a period of years with sheep and cattle. The heavy initial expenses of fencing were borne half by the Board of Agriculture for Scotland, through the North of Scotland College

¹ See Reports on Improvement of Hill Pasture as determined by the Effect on Stock—'Transactions' for 1905, pp. 271-295; for 1908, pp. 269-304; and for 1911, pp. 190-216.

of Agriculture, and half by the Highland and Agricultural Society. Sir John Gladstone kindly provided the stock required for the experiment and the ordinary labour, while the scientific superintendence was undertaken by the writers.

TABLE I.

WEIGHT PER ACRE OF SEEDS SOWN—1910.

	No. of Plot.			
	I.	II.	III.	IV.
	lb.	lb.	lb.	lb.
Perennial Rye-grass	38	9	...	...
Italian Rye-grass	3	...	...	...
Cocksfoot	1	9	9	7
Timothy	1	3	3	2½
Meadow Fescue	1	...	9	7½
Tall Fescue . . . . .	...	...	...	7
Crested Dogstail . . . . .	...	2½	2½	3½
Tall Oat-grass . . . . .	...	...	...	7
Hard Fescue . . . . .	...	...	...	1½
Meadow Foxtail . . . . .	...	...	...	3
Rough-stalked Meadow-grass . . . . .	...	...	...	4
Red Clover	3	3	3	3
White Clover	1½	1½	1½	1½
Alsike	1¼	1¼	1¼	1¼

Results in the First Year.

When the plots were visited in the autumn of 1910 it was noted that the herbage on Plot I. was very thick and consisted of a mass of perennial rye-grass with plenty of clover. On the other hand, Plots II., III., and IV. were all thinner. All had plenty of clover, but would be considered by most farmers as too thinly covered.

The hay obtained from the different plots was found to weigh as follows:—

Plot	I.	48	cwt. per acre.
"	II.	47·3	"
"	III.	43·6	"
"	IV.	41·4	"

It was noted that the hay of Plots II., III., and IV. was much greener than that of Plot I. owing to the larger quantity of green blades present. Samples of the hay were taken and

separated into their different botanical constituents. These were weighed, and the results calculated to weight per acre and to percentages are shown in Table II.

TABLE II.

PERCENTAGE AND WEIGHT PER ACRE OF EACH PLANT IN HAY—1911.

	No. of Plot.							
	I.		II.		III.		IV.	
	Per cent.	Cwt.	Per cent.	Cwt.	Per cent.	Cwt.	Per cent.	Cwt.
Perennial Rye-grass . .	37.9	18.2	25.8	12.2	...	...	...	...
Italian Rye-grass . . .	2.1	1.0	...	...	...	...	...	...
Cocksfoot	trace	...	3.8	1.8	19.5	8.5	18.7	7.8
Timothy . . . . .	.7	.3	5.4	2.6	10.4	4.5	11.2	4.6
Fescues . . . . .	...	...	...	...	1.2	.5	2.9	1.2
Crested Dogtail . . .	...	...	.5	.2	1.6	.7	1.5	.6
Tall Oat-grass . . . .	...	...	...	...	...	...	20.9	8.6
Hard Fescue . . . . .	...	...	...	...	...	...	.2	.1
Meadow Foxtail . . .	...	...	...	...	...	...	trace	...
Rough-stalked Meadow-grass . . . . .	...	...	...	...	...	...	.5	.2
Clovers	59.3	28.5	64.5	30.5	67.1	29.3	40.0	16.6
Weeds	trace	...	trace	...	.2	.1	4.1	1.7
		48.0		47.3		43.6		41.4

As this table shows, the weights of clover on Plots I., II., and III. were nearly the same, but Plot IV. had much less than the others. This was due to the influence of the tall oat-grass, which grew very luxuriantly, and was over 6 ft. high in some places. The weight of this grass in the hay, however, turned out to be much smaller than the appearance of the plot suggested.

It will be noted that though the weight of perennial rye-grass sown on Plot II. was less than one-fourth of that sown on Plot I., there is nothing approaching this difference in the weight of this grass found in the hay. A similar result has been found in many other grass-plot experiments carried out under the auspices of the North of Scotland College of Agriculture. It is due to the fact that with the thinner seeding the plants are bigger, and tiller more freely.

Although Plots II. and III. were seeded with the same quantities of cocksfoot and timothy, there was a much smaller weight of both these grasses on II. than on III. This result also agrees with that found in trials carried out elsewhere, and is due to the repressive influence of the quick-growing rye-grass on the slower-growing grasses.

The aftermath of the plot was grazed, but as the fences were not yet up no record of the weights of the cattle was kept, nor, unfortunately, was any portion of the plots cut and the weight of grass taken. Small samples were, however, cut before the cattle were put on, and were botanically analysed, with the results shown in Table III.

TABLE III.
PERCENTAGE OF EACH PLANT IN AFTERMATH, 1911.

	No. of Plot.			
	I.	II.	III.	IV.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Perennial Rye-grass	1·2	4·0	...	...
Italian Rye-grass	11·4	...	...	...
Cocksfoot	·2	3·7	15·4	6·8
Timothy	·1	1·4	4·8	·2
Fescues . . . . .	...	...	3·4	·9
Tall Oat-grass . . . . .	...	...	...	22·5
Clovers	87·1	90·9	76·4	69·6
	100	100	100	100

The results in Table III. are very interesting, as showing the effect of different grasses on one another. On all the plots there was a large quantity of red clover, and clovers formed by far the largest percentage of the herbage on all. Plots I., II., and III., however, illustrate the great influence of rye-grass in keeping back cocksfoot and timothy. On Plot I. the large proportion of Italian rye-grass is notable, while on Plot IV. the proportion of tall oat-grass is even more notable. The tall oat-grass has, like the rye-grass, some effect in repressing the cocksfoot and timothy.

Results of 1912. Feeding with Sheep.

In the spring of 1912 fences were put up, and on May 9 the plots were stocked with sheep. At this time the plots were carefully examined, and all were found to be well supplied with red clover. Indeed there was a larger quantity of this plant present than is usually found in second-year's grass. On Plot I. the grass was nearly all perennial rye-grass, and it was considered to be the worst plot. There was a comparatively small quantity of leaf-blades at the bottom. Plots II. and III. were much better at the bottom. There was a large quantity of perennial rye-grass on II., but also much cocksfoot

and timothy. Plot III. had a still larger quantity of cocksfoot and timothy, and also a fair quantity of meadow fescue. Plot IV. was open at the bottom but had a taller growth than the other plots. Tall oat-grass predominated.

The plots were stocked with 150 grey-faced hoggs, 36 being placed on Plot I. and 38 on each of the others. Before being placed on the plots the sheep were weighed. The individual weights were not kept, but the sheep were weighed in batches of four or five. After four weeks, June 6, the sheep were again weighed. They were then clipped, and after being rearranged were again weighed and placed on the plots. The weights and increases per plot for the four weeks are shown in Table IV.

TABLE IV.
INCREASE OF SHEEP, FIRST MONTH, 1912.

	No. of Plot.			
	I.	II.	III.	IV.
Number of sheep on plot .	36	38	38	38
	lb.	lb.	lb.	lb.
Total weight, May 9 . .	3219	3375	3269	3429
Average weight, „ . .	89.4	88.8	86.0	90.2
Total weight, June 6 . .	3905	4044	4034	4101
Average weight, „ . .	108.5	106.4	106.2	107.9
Total increase in 4 weeks .	686	669	765	672
Average increase per sheep .	19.1	17.6	20.2	17.7

At the time of the second weighing it was found that on all the plots the red clover was eaten down to the ground. On Plots I. and II. the perennial rye-grass was coming into ear. On I. there was a lot of top growth but little leafy food. On Plots II. and III. cocksfoot was coming into ear, but timothy and meadow fescue showed no appearance of shooting. Plot III. seemed to have more food upon it than any of the plots, while Plot IV. was eaten barer than any other plot. Tall oat-grass was present in large quantity on IV., and was coming into ear. The sheep were redivided in accordance with the appearance of the plots, 40 being put on Plot I., 38 on Plot II., and 42 on Plot III., and 30 on Plot IV. After another month, July 4, the sheep were again weighed. The weights and increases per plot are shown in Table V.

Tables IV. and V. show that great increases were made on

all the plots, especially during the first month. Plot III comes out best in both months. In the second month, in spite of the fact that it carried the greatest weight of sheep, it gave much the greatest increase in weight per head. On the other hand, Plot IV. comes out worst. The reduction in the number of sheep on this plot in the second month was fully justified by the result, and showed that those responsible for the stocking of the plots had accurately judged its capacity.

By the end of the second month the pasture on all the plots was eaten fairly bare, so it was decided to take the sheep off for a month and give the pasture a rest. A few days after the sheep were removed, a mower was run over the plots to cut those grasses which were in ear.

TABLE V.
INCREASE OF SHEEP, SECOND MONTH, 1912.

	No. of Plot.			
	I.	II.	III.	IV.
Number of sheep on plot .	40	38	42	30
Total weight, June 6 .	lb. 3866	lb. 3590	lb. 3916	lb. 2878
Average weight, „ .	96.6	94.5	93.3	95.9
Total weight, July 4 .	4155	3914	4357	3098
Average weight, „ .	103.9	103	103.8	103.3
Total increase in 4 weeks .	289	324	441	220
Average increase per sheep .	7.2	8.5	10.5	7.3

The month of July proved to be very dry, and for three weeks after the sheep were taken off the plots there was no rain, consequently little growth was made by the grass on any of the plots. At the end of the month it was found that Plots III. and IV. had made most growth, and were nearly equal. Plot II. was not so good, while Plot I. was by far the worst.

On July 31 eighty of the fattest sheep were drawn out, and the remaining seventy were weighed and apportioned to the plots as follows: 12 to Plot I., 18 to Plot II., and 20 each to Plots III. and IV. On August 28 the sheep were again weighed. The weights and increases per plot are shown in Table VI.

On August 28 inspection of the plots showed that Plots II. and III. were barest eaten; Plot I. had thickened up at the

bottom, though there was not very much food on it; Plot IV. looked quite close in the bottom, but there was a considerable amount of bent grass present. It was decided to draw out 14 of the fattest sheep, and to divide the rest equally between the plots—14 to each.

TABLE VI.
INCREASE OF SHEEP, THIRD MONTH, 1912.

	No. of Plot.			
	I.	II.	III.	IV.
Number of sheep on plot .	12	18	20	20
Total weight, July 31 .	lb. 1300	lb. 1936	lb. 2199	lb. 2176
Average weight, „ .	108.3	107.5	109.9	108.8
Total weight, August 28 .	1368	2067	2331	2248
Average weight, „ .	114	114.8	116.5	112.6
Total increase in 4 weeks .	68	131	132	72
Average increase per sheep .	5.7	7.3	6.6	3.6

After four weeks, September 25, the sheep were again weighed, and, as the plots were now eaten bare, grazing ceased for the season. The results of the weighings for the fourth month, August 28 to September 25, are shown in Table VII.

TABLE VII.
INCREASE OF SHEEP, FOURTH MONTH, 1912.

	No. of Plot.			
	I.	II.	III.	IV.
Number of sheep per plot .	14	14	14	14
Total weight, August 28 .	lb. 1621	lb. 1571	lb. 1627	lb. 1559
Average weight, „ .	115.8	112.2	116.2	111.4
Total weight, Sept. 25 .	1700	1668	1757	1681
Average weight, „ .	121.4	119.2	125.5	120.1
Total increase in 4 weeks .	79	97	130	122
Average increase per sheep .	5.6	7.0	9.3	8.7

Tables VI. and VII., compared with IV. and V., show how greatly the feeding power of the plots fell off with the advance of the season. They also show that in every month Plot III. gave the best return. In Table VIII. a summary of the results for the whole season is given.

TABLE VIII.
SUMMARY OF RESULTS FOR YEAR 1912.

	No. of Plot.			
	I.	II.	III.	IV.
Total increase in 16 weeks .	1122 lb.	1221 lb.	1468 lb.	1086 lb.
Increase per acre . . .	187 „	203.5 „	244.6 „	181 „
Average number of sheep on plot in 16 weeks . . .	25.5	27	28.5	25.5
Average weight of sheep per acre	440 lb.	460 lb.	489 lb.	441 lb.
Average increase per sheep in 16 weeks	43.9 „	45.2 „	51.5 „	42.6 „
Average increase per sheep per week	2.74 „	2.82 „	3.22 „	2.66 „
Value of increase per acre at 4d. per lb.	62/4	67/10	81/6	60/4

In this table the actual total increase is shown per plot and per acre for the whole time, 16 weeks, that the sheep were on the plots. As Tables IV. to VII. show, the number of sheep on the different plots varied from time to time. The average number of sheep during the whole period of 16 weeks is next shown, and the average weight of sheep per acre carried by each plot. These figures show that Plots I. and IV. carried, on the average, the same number of sheep and practically the same weight of sheep per acre, while Plot II. is a little better than either of them, both in number of sheep and weight per acre, and Plot III. is best of all in both respects.

The table next gives the average increase per sheep in 16 weeks. This is obtained by dividing the total increase obtained on each plot by the average number of sheep carried by the plot. The figures show that Plot III., which carried the greatest number of sheep, also gave the greatest average increase per sheep, while the plots which carried the smallest numbers of sheep, I. and IV., also gave the smallest increase.

During the progress of the experiment the sheep were sold

in drafts, from time to time, as they became fat, and a record was kept of the prices obtained. A record of the time they were kept elsewhere than on the plots was also kept, and allowance made for this. It was found that the actual price obtained for the increase made during the experiment works out at about 4d. per pound. The value of the increase is therefore calculated at this figure. As the table shows, all the plots yielded over £3 per acre, and Plot III. yielded over £4 per acre. Sheep were selling well during the experiment, and as good a price could not be realised every year.

It is well known that the feeding powers of individual sheep vary considerably. In this experiment the numbers per plot were sufficient to render small the degree of uncertainty arising from individual variations. The results obtained in 1912 indicate, with a fair degree of certainty, that Plot III. was decidedly superior to any of the other plots in the food per sheep which it produced. This result was confirmed by the appearance of the plots. During the season the superiority of Plot III. was quite visible in its appearance to the eye. On the other hand, Plots I. and IV. always looked worse than the others, and this also is corroborated by the results of the experiment on sheep.

Results of 1913. Feeding with Cattle and Sheep.

It was decided to graze the plots mainly with cattle in 1913. It is difficult to eat down the freer-growing grasses on such land as was utilised for this experiment, and prevent the pasture becoming rough, if the grazing is done entirely by sheep. Further, it is the custom of the district to graze both cattle and sheep, and we wished to follow the usual practice of the district as closely as was consistent with the conduct of the experiment. The plots were therefore stocked with cattle during the early part of the season, and with sheep in the autumn.

When the cattle were put on in the middle of May, Plot I. had the closest bottom, but the plants, which mainly consisted of perennial rye-grass, were small. Very few plants of cocksfoot or timothy were present, and there was little clover. On Plot II. the cocksfoot and timothy were vigorous and fresh. The plants of perennial rye-grass were small, but, with the white clover, which was a little more plentiful than on Plot I., helped to fill up the spaces. Plot III. had more cocksfoot and timothy than II., and meadow fescue was fairly plentiful, but not in such large quantity as perennial rye-grass in II. Consequently this plot seemed rather opener than II. On Plot IV. the chief grasses were cocksfoot, timothy, meadow

fescue, and tall oat-grass. Rough-stalked meadow-grass helped to fill up the bottom, though the plants were small. The amount of clover on Plots III. and IV. was similar to that on Plot II.

Sir John Gladstone supplied from another farm 24 home-bred cross stirks, rising two years old; and on May 15 these were weighed, and six were placed on each plot. At the end of four weeks—on June 12—they were again weighed, and, as the results from the different plots were fairly equal, the same six animals were returned to each plot and kept there for other four weeks. A summary of the results for these eight weeks is given in Table IX., and the individual weights of all the animals at each weighing throughout the season are recorded in Table XVI. at the end of the paper. Nos. 1 to 6 in Table XVI. were on Plot I. during these eight weeks, Nos. 7 to 12 on Plot II., Nos. 13 to 18 on Plot III., and Nos. 19 to 24 on Plot IV.

TABLE IX.
WEIGHT OF CATTLE, FIRST TWO MONTHS, 1913.

	No. of Plot.							
	I.		II.		III.		IV.	
Number of animals . .	6		6		6		6	
	cwt.	lb.	cwt.	lb.	cwt.	lb.	cwt.	lb.
Total weight, May 15 . .	57	84	55	42	54	42	54	77
Total weight, June 12 . .	64	2	60	104	61	12	61	16
Increase in first 4 weeks .	6	30	5	62	6	82	6	51
Total weight, July 10 . .	67	99	65	44	64	35	65	101
Total increase in second 4 weeks	3	97	4	52	3	23	4	85
Total increase in 8 weeks .	10	15	10	2	9	105	11	24
Increase per head per week	23·6		23·4		23·2		26·2	

The results shown in this table are very striking. Plots I., II., and III. give almost identical increases over the whole period of eight weeks, while Plot IV. is a little better than any of them. The increases made in the first four weeks were extraordinary. Only in Plot II. was the increase less than 6 cwt.; and over the whole 24 animals the increase was more than 1 cwt. per head, or more than 4 lb. per head per day on the average. To put it another way, each acre of grazing gave an increase of over 1 cwt. in live weight for four weeks'

grazing. It will be found, on looking over the individual weights given in Table XVI., that all the animals made good increases, and that a few made quite extraordinary increases.

During the second month the increases were not so great, though still very good. It was during this period that Plot II. made up on I. and III.; while IV. did best of all, and passed all the others in the combined results of the two months.

At the end of the second month it was found that all the plots were getting bare, so it was decided to give them a rest for a few weeks. Plot III. was barest eaten, and had least white clover. No. IV. had most white clover, while Nos. I. and II. were similar to one another.

During July and August the weather was very dry, and the plots suffered a little from lack of moisture. Consequently growth was slow, and the cattle were not put on again till August 26. It was then found that, though the grass had not grown much, it was looking fresh and green, except on Plot I., where there were few green leaf blades. Plots II. and IV. seemed to have about equal amounts of food on them, Plot III. was considered to be hardly so good, while Plot I. looked decidedly the poorest. Consequently only 4 animals were put upon Plot I., 6 were given to Plot III., while Plots II. and IV. were given 7 each. It was soon found, however, that Plot I. was understocked, while IV. was overstocked. After the cattle went on, Plot I. improved greatly; so on September 9, after a fortnight's grazing, 2 cattle were taken from IV., weighed, and placed on I. The numbers of cattle on the different plots were now—6 on Plot I., 7 on Plot II., 6 on Plot III., and 5 on Plot IV.

The cattle were all weighed again on September 23, at the end of the period of four weeks. During these four weeks the average number of cattle on Plot I. was 5, and on Plot IV. 6; while on Plots II. and III., which remained unchanged during the whole period, the numbers were 7 and 6 respectively. A summary of the weights and increases during this month is shown in Table X. All the animals were on the same plots during the third month as during the first two months, except No. 2, Table XVI., which was added to Plot II., No. 6, which spent the first fortnight on Plot IV. and the second on Plot I.; and No. 22, which, after spending the first fortnight on its own plot, No. IV., was moved to Plot I. for the second fortnight.

As Table X. shows, very good increases were made on all the plots during the third month. On Plot IV. the increase was almost 4 lb. per head per day on the average, while on Plots II. and III. it was over 3 lb. per head per day, and on Plot I. just under 3 lb. per head per day. The total increases made for the month quite justified the judgment

formed of the plots from their appearance at the beginning of the month.

TABLE X.
WEIGHT OF CATTLE, THIRD MONTH, 1913.

	No. of Plot.							
	I.		II.		III.		IV.	
Number of animals unchanged during month .	4		7		6		5	
Total weight, Aug. 26 . .	cwt. lb.		cwt. lb.		cwt. lb.		cwt. lb.	
	48	28	78	101	67	78	57	42
" " Sept. 23 . .	51	8	84	77	72	76	61	101
" increase . .	2	92	5	88	4	110	4	60
Increase of 2 animals 1st fortnight . .	...		...		...		1 8	
Increase of 2 animals 2nd fortnight . .	0 90		...		...		...
Total increase for plot . .	3	70	5	88	4	110	5	68
Increase per head per week .	20·3		23·1		23·2		26·2	

In Table XI. a summary is given of the whole increase obtained for the 12 weeks during which cattle were fed on the plots.

TABLE XI.
SUMMARY OF WHOLE RESULT WITH CATTLE, 1913.

	No. of Plot.							
	I.		II.		III.		IV.	
Increase in First month . .	cwt. lb.		cwt. lb.		cwt. lb.		cwt. lb.	
	6	30	5	62	6	82	6	51
" " Second " . .	3	97	4	52	3	23	4	85
" " Third " . .	3	70	5	88	4	110	5	68
Total increase . .	13	85	15	90	14	103	16	92
Increase per acre . .	2	33	2	71	2	54	2	90
Increase per head per week .	22·7		23·3		23·2		26·2	
Value of increase per acre at 40s. per cwt. . .	£4	11 9	£5	5 4	£4	19 3	£5	12 3

This Table, compared with Table VIII., shows that cattle gave much greater increases in 3 months during 1913 than sheep did in 4 months in 1914. For the whole period of 12 weeks the average increase per head made by the cattle is

extraordinary, and is a tribute to the quality of the cattle as well as to the feeding value of the pasture.

The cattle were considered to be worth 40s. per live weight hundredweight, and this value was therefore placed upon the increase for the purposes of calculation. Table XI. shows that at this rate Plots II. and IV. gave returns of over £5 per acre for the cattle grazing, Plot III. just under £5, while Plot I. was a little behind the others. It is noteworthy that Plot III., which was so far ahead in the sheep-grazing during 1912, did not maintain its position with cattle during 1913. The results with cattle are not, however, quite so trustworthy as those with sheep, for with the smaller number of animals there is a greater uncertainty due to individual variations, such as are shown in Table XVI.

As there was still a considerable amount of grass on all the plots after the cattle were taken off, it was decided to give them a rest for a week and then place sheep upon them. They were inspected on September 30, when it was found that there was most food—chiefly bent and rye-grass—on Plot I. The others seemed about equal. Thirteen sheep were placed on Plot I., while the others got 11 each.

The sheep were weighed at the end of 4 weeks, on October 28, and, as there was still plenty of food on the plots, they were continued on them for another fortnight. The results of these weighings are shown in Table XII.

TABLE XII.
INCREASE OF SHEEP, FIRST AND SECOND PERIODS, 1913.

	No. of Plot.			
	I.	II.	III.	IV.
Number of sheep in plot .	13	11	11	11
Total weight, September 30	1406	1172	1124	1182
Average per sheep, " .	108·1	106·5	102·2	107·4
Total weight, October 28 .	1481	1261	1214	1258
Average per sheep, " .	114	114·6	110·4	114·4
Total weight, November 10	1499	1280	1241	1272
Average per sheep, " .	115·3	116·3	112·8	115·6
Total increase in 6 weeks .	93	108	117	90
Average increase per sheep .	7·2	9·8	10·6	8·2

The sheep had to be dipped, and some of them were already quite fat, so they were weighed and removed on November 10,

but were at once replaced by another lot, as the pasture was not yet nearly bare.

As Plot I. seemed still to have far more food on it than any of the others, 15 sheep were placed upon it, while only 10 were placed upon each of the others. The feeding was continued for four weeks, and on December 8 the final weighing was made and the sheep removed for the season. At that time all the plots seemed to be eaten bare, with the exception of some rank tufts, which were especially plentiful on Plot I.

Table XIII. gives the results of the feeding of the second lot of sheep, while Table XIV. gives a summary of all the results for sheep during 1913.

TABLE XIII.
INCREASE OF SHEEP, THIRD PERIOD, 1913.

	No. of Plot.			
	I.	II.	III.	IV.
Number of sheep in plot .	15	10	10	10
Total weight, November 10	1335	884	892	886
Average per sheep, " .	89	88.4	89.2	88.6
Total weight, December 8 .	1401	954	934	930
Average per sheep, " .	93.4	95.4	93.4	93.0
Total increase in 4 weeks .	66	70	42	44
Average increase per sheep .	4.4	7.0	4.2	4.4

Tables XII., XIII., and XIV. show that the results from Plot I. were disappointing. Though it always seemed to have most food on it, it gave less increase in both months than Plot II. and no more than Plot III. Even Plot IV., which gave a smaller total increase, gave a bigger increase for sheep. It would seem as though the grass on Plot I. was not so nutritious as that on the other plots, though there was more of it. At the end Plot I. remained rougher than any of the other plots.

The increase was valued at the same rate as in 1912—namely, 4d. per lb., and the value of the increase per acre given by each plot is shown in Table XIV.

If the whole results for 1913, both with cattle and sheep, are taken, it will be found that no plot shows such decided superiority all through as No. III. did in 1912. No. I. is on the whole a little behind all the other plots, but the result is not very decisive. No. IV., which did well during the summer with cattle, fell off with the sheep feeding in autumn.

Tall oat-grass, which was such a feature of this plot in 1912, was not nearly so prominent in 1913. The plants were comparatively small and wiry. On the other hand, there was more white clover on this plot in 1913 than on any of the others, and it is suggested that the good results with cattle during the summer may have been due to this. Plot III. had most grass of all the plots during the summer, but was comparatively poor in white clover.

TABLE XIV.
SUMMARY OF RESULTS FOR SHEEP, 1913.

	No. of Plot.			
	I.	II.	III.	IV.
Total increase	lb. 159	lb. 178	lb. 159	lb. 134
Increase per acre	26·5	29·7	26·5	22·3
Average number of sheep in plot	13·8	10·6	10·6	10·6
Average weight of sheep per acre	239	189	184	188
Average increase per sheep .	11·5	16·8	15·0	12·6
Average increase per sheep per week	1·15	1·68	1·5	1·26
Value of increase per acre at 4d. per lb.	8/10	9/11	8/10	7/5

The whole of the results obtained from these plots for the three years show that a heavy seeding with rye-grass, such as was given on Plot I., is not superior to a lighter seeding such as was given on Plot II., or to a mixture without rye-grass such as that of Plot III. If we value the hay yielded in 1911 at £3 per ton, the financial results, leaving out the aftermath of 1911, can be summarised as shown in Table XV.

Plots I. and II. gave practically equal yields of hay, while Plots III. and IV. were behind. In the two years' grazing, Plots II. and III. have both been decidedly superior to Plot I.

On the other hand, the cost of seeds for Plots III. and IV. was considerably greater than that for Plots I. and II. If we take the prices for 1910, the seeds for Plots I. and II. each cost about 16s. per acre, while the seeds for Plot III. cost 25s. and those for Plot IV. 43s. per acre. The prices of seeds, however, vary considerably from year to year. At present prices the same seeds would cost about 15s. per acre for Plots I. and II., about 19s. for Plot III., and about 34s. for Plot IV.

TABLE XV.

VALUE OF PRODUCE PER ACRE—1911, 1912, AND 1913.

	No. of Plot.			
	I.	II.	III.	IV.
Hay, 1911	144/-	142/-	131/-	123/3
Sheep, 1912	62/4	67/10	81/6	53/8
Cattle, 1913	91/9	105/4	99/3	112/3
Sheep, 1913	8/10	9/11	8/10	7/5
Total value	306/11	325/1	320/7	296/7

Hay valued at 60/- per ton.

It is intended to continue these experiments for a further period of three years, in order to find how the feeding values of the different pastures alter as their age increases.

We desire to express our thanks to Mr Fraser, successor to Mr Dewar as Factor to Sir John Gladstone, for much help and advice in the conduct of the experiments during the past two years.

TABLE XVI.

CATTLE, 1913.—WEIGHT OF EACH ANIMAL AT EACH WEIGHING.

	15th May.		12th June.		11th July.		26th Aug.		23rd Sept.		Total Increase.	
	cwt.	lb.	cwt.	lb.	cwt.	lb.	cwt.	lb.	cwt.	lb.	cwt.	lb.
1	9	70	10	76	11	24	11	52	12	14	2	56
2	8	63	9	56	10	32	11	40	12	56	3	105
3	10	0	11	28	11	94	12	30	13	10	3	10
4	9	77	10	84	11	38	11	90	12	58	2	93
5	10	63	11	74	12	23	12	80	13	38	2	87
6	9	35	10	20	11	0	11	58	12	82	3	47
7	9	14	9	106	11	13	11	54	12	44	3	30
8	9	70	10	76	11	41	11	86	12	77	3	7
9	9	42	10	28	11	32	11	93	12	90	3	48
10	9	77	10	90	11	46	12	2	12	104	3	27
11	8	77	9	56	9	88	10	24	11	12	2	47
12	8	98	9	84	10	48	10	100	11	46	2	60
13	9	63	11	28	11	48	11	104	12	70	3	7
14	9	56	10	48	11	28	11	80	12	70	3	14
15	8	77	9	80	10	20	11	22	12	24	3	59
16	9	42	10	44	10	73	11	52	11	98	2	56
17	8	77	9	96	10	72	11	18	11	90	3	13
18	8	63	9	52	10	18	10	86	11	60	2	105
19	9	28	10	64	11	0	11	54	12	48	3	20
20	8	98	9	56	10	21	10	68	11	26	2	40
21	9	0	10	42	10	104	11	22	11	96	2	96
22	8	105	9	64	10	86	11	84	12	82	3	89
23	9	42	10	74	11	86	12	76	13	28	3	98
24	9	28	10	52	11	28	12	16	13	16	3	10

NOTES ON THE DESTRUCTION OF RATS IN EAST LoTHIAN.

By JOHN STIRLING, Haddington.

THE brown or Norway rat (*mus decumanus*) is very widely distributed over the British Isles, as well as over the greater part of Europe. It would be impossible to point to another animal which is so catholic in its tastes as regards a home. It flourishes, contented and happy, under the dining-room floor of the palatial mansion-house, in the fields and woods, in our City sewers, or on the rocky islets around our shores. As regards its diet also, the rat has no pronounced predilections. Every delicacy in the butler's pantry, all kinds of flesh and fish, many vegetables, and practically any kind of grain, please its palate and sustain it in health.

It has been calculated that there are forty millions of rats in Britain, and that the damage they do annually amounts perhaps to £15,000,000. The latter figure may be exaggerated, because a large proportion of the rat population is in the sewers and on the sea-shore where they do not do much, if any, harm; but that the rat is one of the farmer's worst enemies there is not a shadow of doubt. As illustrating the damage done by rats, the following facts, taken from the letter of a well-known farmer to the writer, are eloquent. He states: "I had six stacks of wheat on wooden stools. The centre of one gave way shortly after harvest, allowing the rats free access to it from a ditch near. When we thrashed the stacks, the rat-infested one only yielded nine bags, and the other five averaged thirty-one bags. When thrashing we killed close on 200 rats out of the bad stack, the others being practically free. I may add, the whole district was badly infested at that time, and shortly after that I had a man put on, and he trapped 840 in three weeks over and above those poisoned in the last week." Not only does the rat consume an immense quantity of grain, but it nibbles and destroys much more. It attacks swedes in the drill, and the bulbs which have been bitten are easily destroyed by frost. It scrapes the soil from potatoes in the drill, and often makes huge holes in the covering of potato-pits, thus letting in frost and indirectly doing great damage. To get water it will eat through a lead pipe, and in the course of taking exercise or making a home, it very frequently blocks up field-drains and ditches.

East Lothian being fertile, largely arable, and fat generally, has for long been afflicted by great numbers of rats. From the Coast to the Lammermoors no town, village, or farm is without them. The resident population may vary, but if a farm is comparatively free one year, next season it may be overrun by swarms. Sometimes rats change their abode without any apparent reason. After a snowstorm last winter a shepherd found in the snow outside his house the footprints and tail mark of a rat. Thinking it would have gone but a short distance, he set out to track it across the snow, and found this involved a heavy walk for three miles to a farm place. The rat probably thought it would fare better at the steading if the snow was to lie.

On 19th March 1909 Mr A. G. Spence, Longyester, read to the East Lothian Farmers' Club a very valuable paper on "The Farmer's Pests," dealing particularly with rooks, pigeons, rats, and mice. As regards rats, he pointed out that a pair of rats breed five or six times in a season, having from five to ten young each time, and that the young again breed at six months of age. The period of gestation is about twenty days. Mr Spence said that on the higher farms, such as his own, the rat plague seemed to be increasing, and this he thought might be attributed to the killing of the natural enemies of the rat. It is well known that over-zealous gamekeepers constantly shoot owls and kestrels, both of which live almost entirely on rats, mice, and voles. An owl has been known to take a young pheasant, but does the keeper who shoots it in the act consider how many rats have been saved by the owl's death, and how many partridge eggs the rat so saved would eat? One of the most experienced keepers in East Lothian, who for forty years reared very large numbers of pheasants, tells me he always preserved owls. On one occasion a kestrel did acquire the habit of taking young pheasants, but this was exceptional. When this particular bird was shot the damage ceased.

As a result of Mr Spence's lecture, the Club was satisfied that individual and spasmodic efforts at rat destruction were of little avail, and that concerted measures were necessary, largely because rats when they find they are unduly harassed on one farm migrate to another. Of this we had ample evidence. A Committee was appointed to call a public meeting of landowners, factors, shooting tenants, and farmers. A meeting took place in the Corn Exchange, Haddington, on 16th April 1909, and many gentlemen took part in the discussion as to the steps which should be taken for the destruction of farm pests, particularly rats. At that time there was before Parliament a Bill, introduced by Sir Charles M'Laren, to give local authorities power to destroy rats, and that Bill was favourably mentioned, but the

meeting decided that much might be done by co-operation. A Standing Committee was appointed with powers to take subscriptions and engage men, and it was remitted to myself as Honorary Secretary to draw up a scheme or organisation for the county. This I did by dividing the county into districts, so many parishes to a district. In fixing the limits of a district, I had in view the amount of ground which a killer could go over in the course of a winter. The other features of the scheme were—

1. The killers to be engaged by a Central Committee representing landowners, shooting tenants, and farmers, and to be paid by the Treasurer.

2. These men to be supervised by some one voluntarily undertaking that work in each district—not simply by the farmer on his own farm—the party supervising to say how long a killer should remain on a farm.

3. The killers not to go on to a farm unless the tenant became a subscriber, nor into a plantation unless the shooting tenant subscribed. We were anxious to get right to enter plantations, because when pheasants are hand-fed rats swarm in the woods.

4. The subscription to be at the rate of one penny per £ of farm rental, or alternatively, in the option of the tenant, at the rate of 10s. per 100 acres.

5. Proprietors to be asked to contribute—most of them did so where their farm tenants joined the scheme.

6. The killing to be by means of traps, dogs, and ferrets. Poison not to be employed except at the request of the tenant or proprietor's gamekeeper. I adopted this rule because I knew of a case where poison had been freely used, and the rats, thirsting for water, had burrowed into a sunk fountainhead which supplied a house. Twenty dead rats were found in the tank, and but for the timely discovery the results might have been most serious. In another case, fat poisoned with strychnine had been placed in a small enclosure, netted round to a height which prevented fowls flying over, but sparrows got in, and within a day or two many valuable fowls were killed. Either the sparrows carried pieces of the fat and dropped these outside, or the fowls picked at the dead sparrows.

7. As there had been many complaints of the excessive numbers of rooks in the county, the rules provided that the rat-killers should be instructed to assist in destroying rooks by keeping old birds off their nests for a couple of days when the eggs were near hatching. This only to be done when proprietors of rookeries approved. On the whole, this method of reducing the number of rooks seems quite as humane as shooting young birds on the branches.

In the framing of the scheme and its subsequent working out I had much assistance from Mr Spence, who delivered the lecture before referred to, and from Mr Law, who had been for forty years head-keeper on the Linlithgow Estates in the county, and who had immense practical experience of vermin-killing. The scheme was carefully revised by the standing Committee, and circulars were sent out to every proprietor, shooting-tenant, and farmer in the county asking them to join and subscribe. Before the crop was off the ground we were ready to start operations in several districts, and four men were engaged, wage 25s. a-week with 1s. 3d. extra for maintenance of each terrier. The Committee provided each man with about six dozen traps, two ferrets, and two terriers. It was found difficult to get really good dogs. One advertised "as a demon at rats" bolted a field's breadth as the first rat, urged by a ferret, left the hole. Scotch, Dandie Dinmont, and Wire-haired fox terriers were far and away the best. Several dogs were unfortunately poisoned, through poison being put into the holes by the farmer without the killer's knowledge. The arrangements made worked satisfactorily, and the killers were ably assisted by several gamekeepers and by farmers sending for them at thrashing times. This is a most important point. At one farm 650 rats were killed in the course of the thrashing of seven stacks after our regular season was over. The ground subscribed for was gone over twice between 1st November 1909 and 30th April 1910, and the Secretary was able to report that

1. The voluntary assessment and proprietors' subscriptions from seventy-three parties amounted to £157, 6s. 1d.

2. The expenditure on traps, dogs and licences, wages, printing, &c., was £148, 14s. 2d.

3. Rats killed, apart from these destroyed by poison, and exclusive of the 650 mentioned above, numbered 9486.

Undoubtedly some mistakes were made during the first six months working of the scheme. Some of the men engaged as killers were much more efficient than others, and the supervision was better in some districts than elsewhere, but experience had been gained, and the Committee hoped that a larger area would be attacked in the following winter. Unfortunately the enthusiasm shown at the inception of the movement was found to be on the wane. Some subscribers thought that because many rats had been killed on their places during the first campaign they would get peace for a time, and accordingly they dropped their subscriptions. Some thought that their neighbours had got too much attention, while some gentlemen who were thoroughly alive to the necessity of concerted action were of opinion that the County Council should take over our

organisation and pay the expense from the Public Health rate. For one reason and another our subscribers dropped from seventy-three to forty, and instead of having four killers we felt we were not justified in engaging more than two. The two, however, worked excellently, and killed by traps and dogs 6858 rats between 1st October 1910 and 26th April 1911, as against 9486 for four men during the first winter. After April 1911 one of the men was engaged by a proprietor whose land we had been unable to go over, and there he killed 600 rats in a few weeks. If our funds had allowed it we would have kept the men on later than April, because steadings cannot be well cleared when cattle are in the courts.

It may be remembered that during the years 1909-11 there was a good deal of talk and writing as to the possibility of rats being carriers of diseases which might be communicated to human beings. Cases suspiciously akin to Eastern Bubonic plague occurred in England, and some medical men were of opinion that the patients had probably been bitten by fleas which had been on infected rats. The Local Government Boards of both England and Scotland issued circulars urging the need of measures being taken to exterminate rats. Taking advantage of this expression of official views, members of our Committee brought up the subject at County Council meetings. In the winter of 1910-11 correspondence passed between the Clerk to the County Council and our Committee, and the result was that, with the consent of the Local Government Board for Scotland, the two District Committees—Western and Eastern—of our County Council decided to take over the work our Committee had carried on, and to charge the expense to the Public Health rate. A Sub-committee was appointed by the County Council, which co-opted some of our members, and Mr Law, whom I have already mentioned, was asked to supervise the killers. The county was divided into 7 districts, each of which comprised roughly 35 farms, and seven men were engaged. In the period between 1st October 1911 and 5th October 1912, the seven killers employed under the County Council destroyed by traps and dogs 29,804 rats, at the cost to the rates of £454, 12s. 3d., being $\frac{1}{2}$ d. per £ on the rental, half, one farthing, being charged against proprietors and one farthing against occupiers. Unfortunately, so far as the Western District of the county was concerned, continuity of policy was to be broken, because by a vote in a small meeting on 7th October 1912 it was decided to cease employing vermin-killers and thus once more to leave rat destruction to individual effort. The Eastern District Committee, on the other hand, continued the crusade, and in the year commencing 28th October 1912 had three men constantly employed. It was wisely decided

that the men should be kept on throughout the whole year, so as to have steadings thoroughly cleared, and also that they might attend all thrashings. One man who was directed to keep in touch with the thrashing mills was able to enter in his book 1000 killed during one month this summer—1913. It may be mentioned that each man keeps a book, and this is signed by the farmer or gamekeeper on the killer leaving a place. The wage paid by the Eastern District Committee of the Council to vermin killers is 30s. a-week, the man providing and maintaining his own dogs and ferrets, and the county supplying the traps. For the year to 28th October 1913 the numbers killed in the Eastern District are approximately, apart from rats poisoned, 18,000, the cost being about £236.

The discontinuance of concerted measures in the western part of Haddingtonshire has already borne evil fruit, and many farms which in the summer of 1912 were practically clear are again overrun. One hears constantly of 40 to 60 rats being killed in one wheat-stack. Not only has enormous damage been done by the rats, but the grain when thrashed bears evidence that vermin have been very numerous in the stacks.

In the western part of Haddingtonshire many farmers are making every effort to clear their steadings and stackyards, but in every district there is some less energetic individual who looks upon rats as an unavoidable evil—indeed, regards them as he would a spell of unfavourable weather. Such a man not only punishes himself but does incalculable harm to his neighbours. Our voluntary organisation did educate some such farmers, and if it had continued for a few years more subscribers would have come in; but there seems to be little doubt that, if the rat is to cease being a very great cause of loss to agriculture and a menace to health, the measures for its destruction must be undertaken by the Local Authorities and at the public expense.

A PLEA FOR THE INCREASED USE OF LIME.

By PROFESSOR JAMES HENDRICK, B.Sc., F.I.C., University of Aberdeen.

Lime and Fertility.

THE fertility of the soil of Scotland suffers more from lack of lime than from lack of any other substance. It is a curious fact that, while during the past fifty years our farmers have learned to use, in addition to dung, many other manures, nitrogenous, phosphatic, and potassic, they have during the same period unlearned the use of one of the most important and necessary of all the fertilisers of the soil, lime. Our soils are, generally speaking, well manured, and their fertility is well maintained in nitrogen, phosphate, and potash, both by the use of the ancient and trusted farmyard manure and of the comparatively recently introduced chemical fertilisers, like sulphate of ammonia, nitrate of soda, superphosphate, basic slag, potash salt; but for more than a generation, so far as lime is concerned, we have been living on the capital laid up in the soil by our predecessors, and steadily letting down the fertility of the soil.

Lime is one of the most ancient of manures, and until the latter part of the nineteenth century seems to have been looked upon, like dung, as a necessity of good farming. In all places where the soil is not naturally rich in lime, it was held to be as important to apply lime as to apply dung. In 'An Encyclopedia of Agriculture,' by J. C. Loudon, 2nd edition, published in 1831, it is stated: "Lime is by far the most important of the fossil manures; and, indeed, it may be asserted that no soil will ever be fit for much which does not contain a proportion of this earth, either naturally or by artificial application. Next to farmyard dung, lime is in most general use as a manure, though it is one of a quite different character, and when judiciously applied . . . its effects are much more lasting, and, in many instances, still more beneficial than those of farmyard dung." He further states: "The ground, likewise, more especially where it is of a strong nature, is more easily wrought; in some instances, it is said the saving of labour would be sufficient to induce a farmer to lime his

land, were no greater benefit derived from the application than the opportunity thereby gained of working it in a more perfect manner."

Many more such quotations might be given from old writings, but the above will be sufficient to show the views held on the subject more than eighty years ago. These views continued to be generally held till some forty years ago, and till that time lime continued to be extensively used. Farmers believed in lime almost as they believed in dung. Now what a change! The farmer still believes in dung, and if you wish to destroy his faith in you, and convince him that you are a pure theorist, not worth attention, preach to him that dung is of little value or use; but if you preach to him the value of lime he probably laughs at you and gives you instances to prove not only that it does no good, but that it burns the soil and causes all sorts of evils. So quickly has he forgotten an ancient and well-founded custom of farm practice.

Statistics as to the use of Lime.

It is difficult to get any accurate statistics showing the extent to which lime was formerly used for agricultural purposes as compared with its present use. While one can obtain plenty of evidence of the former extensive use of lime, there are no exact figures showing the amount used in Scotland, or in any extensive district of Scotland. The writer recently endeavoured to obtain statistics as to the consumption of lime in the counties around Aberdeen, and especially in the counties of Aberdeen and Banff. It was found that, while certain statistics were available, it was hopeless to expect to get any complete information, either as to the importation of lime into the district or as to its production in the district. The information collected is only sufficient to enable a rough estimate to be made.

The Port authorities of Aberdeen have complete statistics of the importation of lime into the city, by sea, and Mr Ross, the Harbour Treasurer, very kindly gave me figures for the past fifty years. Unfortunately the Railway Companies which carry traffic into the district from the South were unable to give me similar help. The Great North of Scotland Railway Company, which has lines running north and west of the city, and which connects with the lime-kilns in Banffshire, was able to give me more assistance, and Mr Willox, the Goods Manager, was good enough to obtain some useful information for me.

The following table shows the importation of lime through the Port of Aberdeen during the past fifty years. The figures are averages for five-yearly periods.

						Tons per annum.
1864-68	.	.	.	.	.	17,280
1869-73	.	.	.	.	.	16,968
1874-78	.	.	.	.	.	16,746
1879-83	.	.	.	.	.	14,780
1884-88	.	.	.	.	.	11,410
1889-93	.	.	.	.	.	7,089
1894-98	.	.	.	.	.	7,587
1899-1903	.	.	.	.	.	5,168
1904-08	.	.	.	.	.	4,174
1909-13	.	.	.	.	.	3,988

The figures obtained from the Great North of Scotland Railway Company give similar evidence. They show a very great diminution during the fifty years in the amount of lime passing by rail through Aberdeen.

These figures do not show the whole truth as to the diminution in the use of lime for agricultural purposes, for they do not distinguish between lime used for agriculture and that used for other purposes. Fifty years ago nearly all the lime coming to Aberdeen appears to have been intended for agricultural use. Some was used for building purposes, but the population of the city was much smaller before 1870 than it is at present. With the exceptions of agriculture and building, there does not appear to have been any other industry in the Aberdeen area which, fifty years ago, consumed large quantities of lime.

In recent years, in addition to the large quantities consumed by builders, very large quantities have been used by the gas works, and by the papermakers in their soda recovery plant. Probably other industries have increased their consumption as well.

The writer is indebted to the Manager of the Aberdeen Corporation Gas Works for kindly supplying figures showing the annual consumption of lime by those works since the Corporation took them over in 1871. In the early seventies under 400 tons per annum were used. This had increased to over 1000 tons by 1892, and to 2000 tons by 1904. Since then it has diminished, owing to the use of oxide of iron instead of lime in gas purification, but till 1910 it continued not far short of 2000 tons per annum.

Fifty years ago the paper works had no plant for recovering caustic soda, and used little or no lime. They now use large quantities. The managers of the different works about Aberdeen have all been good enough to supply me with information. This shows that the present consumpt of lime by these works is not far short of 2000 tons per annum. This consumption has practically all arisen within the last fifty years—that is, since the agricultural consumption began to fall away.

The above figures show that about 1910 the gas works and

the paper works alone used an amount of lime practically equal to the whole of that brought into Aberdeen by the harbour. No statistics have been obtained as to the amount used for building and other city industries, but these appear to use a considerable amount, and probably account for a large proportion of what reaches the city by rail. Whereas between 1860-70 there was distributed through Aberdeen, for agricultural purposes, a quantity of lime which was certainly over 10,000 tons per annum, and was probably over 15,000 tons per annum, there is not now distributed through the same centre more than one-tenth of that amount.

Local production of Lime.

A somewhat similar tale is told by the local producers of lime. Many lime-kilns formerly used are now extinct. It has not been found possible to obtain any record of the number of local lime-kilns which were formerly in operation in different parts of the counties of Aberdeen, Banff, and Kincardine. The only lime-kilns now in use are situated in Banffshire, but at one time there were active kilns in Aberdeenshire, on Deeside and Donside, and probably in other places. No doubt some of these were small, local affairs, and many of them seem to have given up work far back in the nineteenth century, no doubt because the local rock was not of good quality, and fuel was difficult to obtain, so that with improved means of communication it became cheaper and better to import lime than to produce it locally.

The Banffshire lime works at present in operation were all applied to for information, but unfortunately, owing to changes of ownership or other circumstances, the records of most of them go back only a few years. In cases where there were no exact statistics available general information was usually supplied by those who had been long connected with the works. The writer is indebted to all those who so kindly gave him figures or information. The following quotations summarise the information received from Banffshire lime-burners. "I should say that from 1870 to 1880 there was a considerable amount of business in shell lime with farmers; during the next twenty years or so it steadily declined, until towards the year 1900 business with farmers was of very little consequence. In the spring of 1903 I commenced to supply ground-lime, as I found there was a growing demand for lime in this form." The writer proceeds to give figures showing that a considerable business has arisen in ground-lime, his output of which averages over 1000 tons per annum.

Another lime-burner, after stating that the output of lime

for agricultural purposes has greatly diminished since about 1870, continues: "In my business I cannot report any increase in the demand for agricultural lime since 1900. A good deal of ground-lime is now being used, but the use of lime-shells for agriculture has come to be of little consideration." Other lime-burners gave similar information.

The Banffshire evidence seems to show that the diminution in the use of lime produced there has been very great, though not quite so great as in the case of lime imported through Aberdeen. Evidently the introduction of ground-lime has caused a certain amount of revival in the trade, and, since 1900, considerable amounts of lime in this form have been used, though the quantities of ground-lime consumed are not nearly so great as the quantities of lime-shells which were formerly used.

All the evidence obtained, both in Aberdeen and in Banffshire, shows that the great falling away in the use of lime in these districts took place from about 1880 to 1900. There was already some falling off between 1870 and 1880, but the great fall took place after the seventies.

The value of Carbonate of Lime.

In order to supply the soil with lime it is not necessary to use burnt lime. Lime can be quite well supplied in the form of mild lime or carbonate of lime. Burnt lime is prepared from carbonate of lime by heating it in a kiln. The carbonate of lime then loses carbon-dioxide gas, and becomes burnt lime or lime-shells, which contain oxide of lime or quick-lime. One hundred parts of pure carbonate of lime will yield 56 parts of oxide of lime. But when oxide of lime is exposed to the air, or placed in the soil, it soon combines again with carbon-dioxide gas, and turns into carbonate of lime. Quick-lime never remains long in the soil as such. It soon passes into the form of carbonate of lime or mild lime.

Formerly much carbonate of lime was applied to the soil, and in old works on agriculture the use of marl and chalk is referred to equally with the use of burnt lime. Part of the burnt lime also appears really to have been applied to the soil as carbonate of lime, for it was a common practice to make it into a compost with vegetable refuse, earth, road-scrappings, and such materials, and to allow it to lie for some time before application. In such a compost the quick-lime would be, to a large extent at any rate, turned into carbonate of lime.

In the early part of the nineteenth century great quantities of chalk were applied to the soil in those districts of England where soft chalks could be easily and cheaply obtained. The quantities applied must in some cases have been enormous.

Some of the fields of the Rothamsted Experiment Station, for instance, when first analysed towards the middle of the nineteenth century, were found to contain in the top nine inches of soil about 5 per cent of carbonate of lime. This had been applied as dressings of chalk early in the century. The natural soil is itself almost free from chalk, and to supply the amount found dressings of over fifty tons per acre must have been given.

In the north-east of Scotland there is no soft chalk, but in different places deposits of marl and of shell sand were, at one time, used. Shell sand still continues to be used in Orkney, but on the mainland of the north of Scotland the use of such materials appears to have been discontinued, even before the use of burnt lime began to be given up. Probably there were various reasons why the use of carbonate of lime was discontinued. There is only a limited supply of it, sufficiently soft and friable for use, to be obtained throughout the north of Scotland. Its use, therefore, was local. It costs more for carriage than burnt lime, since a greater weight of it has to be carried to yield any given amount of lime. The views of the early agricultural chemists probably also tended to cause burnt lime to displace carbonate of lime, as they took the view that quick-lime was much more valuable in the soil, since it promoted the changes which produce plant-food, while they supposed carbonate of lime had little effect in this direction. The knowledge of Sir Humphry Davy, and the other agricultural chemists of the early part of the nineteenth century, as to the work of lime in the soil was very imperfect. Still, their views, based on this imperfect knowledge, passed into agricultural text-books, and tended to promote the belief that chalk is of little use in comparison with quick-lime. Though the advance of knowledge soon showed that this opinion was based on very imperfect information, still people have continued to forget that carbonate of lime has any agricultural value; and when, recently, carbonate of lime, in the form of ground limestone, was placed upon the market, and used for agricultural purposes, it was written about in the agricultural press as if it were a new discovery.

Probably friable chalks, marls, and shell sands were used for dressing the soil long before quick-lime was used. But before the use of quick-lime was begun, limestones, marbles, and all the hard forms of carbonate of lime could not be used for agricultural purposes, as in times where only very crude machinery was available the trouble and cost of grinding them to a state fit for distribution was prohibitive. If hard limestone was burnt, however, it could be obtained as a fine powder quite readily by slaking it. Probably it was to obtain the lime in a

powdery form for distribution that limestone was burnt in early times, rather than from any idea that the quality or value of the lime was increased by burning. In any case there is no reason why carbonate of lime should not be freely used where it can be obtained in a friable form fit for distribution, and where the cost of obtaining it is such that the lime in it costs no more than it does in quick-lime. For many soils, and especially for light thin soils, weight for weight of lime, carbonate of lime is more effective than quick-lime, and far less likely to cause any injury. Yet in the neighbourhood of Aberdeen, and in many other places in Scotland where the soils are hungering for lime, thousands of tons of friable carbonate of lime, which farmers could obtain for little or nothing, are being thrown away by papermakers who produce it as a by-product from their causticising plant. So also there are many deposits of marl or shell sand in different parts of the country which were once highly valued, but which have now passed out of use and even out of memory. These ought to be again brought into local use.

Reasons for the discontinuance of Liming.

There appear to be a number of reasons why so great a diminution took place in the use of lime between 1880 and 1900. It was about 1880 that the great agricultural depression set in. Up to that period reclamation of waste land was active throughout the north-east of Scotland. Between 1850 and 1880 a great deal of moorish and peaty land was reclaimed. It was an axiom that, in reclaiming such land, a heavy dressing of lime had to be given. When the reclamation of land ceased, one of the great uses of lime ceased. Reclaimed land requires, of course, to be limed again from time to time, like other land, but this appears to have been forgotten. One still meets with many farmers who say that if they were reclaiming land they would give it a good dressing of lime, but who do not believe in using it for any other purpose, and have forgotten that their forbears used it for other purposes.

Another reason which is frequently given for the abandonment of liming is that after 1880 farmers and lairds were in such straits that they had to cut down all the expenses they could. Lime seemed to be a thing which could be done without. Its effects last a long time, and no immediate results are seen when its use is discontinued. Therefore many proprietors of estates on which, formerly, it was held to be part of good estate management to supply a certain amount to the tenants in the course of each lease, or to insist on their using a certain amount, ceased to trouble about the matter. In like manner

many farmers who had formerly used lime as a matter of course cut this off as an unnecessary item of expense.

There was another alteration in farm practice which also tended to confirm farmers in their belief that they could save the expense of liming without injury to themselves,—that was the gradual introduction of artificial manures. These manures began to be extensively used about the middle of the nineteenth century, and first by the use of guano, and later by the use of superphosphate, sulphate of ammonia, nitrate of soda, basic slag, and other manures, farmers were taught to look for immediate and easily observable results from manures for which they paid money. Before 1880 the use of artificial manures was quite established, and nearly everybody had learned to use them to a greater or less extent. A slow-acting material like lime, whose results are not, in many cases, very noticeable, fell into disrepute, and the idea became prevalent that other manures gave, much more quickly and better, the same results as lime. This view was tersely expressed by a correspondent on Deeside, who, when he was applied to for information concerning a lime-kiln formerly in use, which had been idle for more than forty years, wrote: "In my opinion the reason for farmers not using as much lime to their land as formerly is that they can get so many kinds of manure that will give them a quicker return for their money."

Another reason for the cessation of liming, which has been mentioned by several correspondents, was the labour difficulty. The increased cost of labour makes the cost of liming greater than it was, and there is also more difficulty in getting men to undertake so unpleasant a task as liming. The extension of the use of ground-lime has been greatly favoured by the fact that it can be applied without slaking and with a minimum of labour. At the same time it costs more, and the farmer who uses it is merely paying for the labour through a manufacturer instead of directly.

Another reason which the writer has repeatedly heard farmers give for ceasing to use lime is that it burns the soil. Those making this statement generally quoted cases of soils which had been seriously injured at one time or other by the use of lime, and it was generally stated that such soils either became almost infertile towards nearly all crops, or that they ceased to grow some particular crop, such as oats. There is no doubt a case here for investigation. We know that under certain conditions lime, in the form of quick-lime, may do at any rate some temporary injury to the soil, but there is no reason to suppose that the use of carbonate of lime, even in very large quantities, will render any soil infertile. Many soils on chalk or limestone

strata naturally contain quantities of lime far in excess of anything that is ever likely to be applied artificially, and, as already stated, enormous quantities of carbonate of lime were at one time applied to soils in England with nothing but good effects. The injury then, in cases where such has arisen, cannot have been due to the amount of lime applied.

The complaint of the burning of the soil by lime is no new one. John Shier, a former Fordyce lecturer in the University of Aberdeen, published in 1844 a new edition of Sir Humphry Davy's 'Elements of Agricultural Chemistry.' In one of the notes which he added to the text he states: "In Scotland we often hear of soils which have been scorched with lime. Such soils grow green crops and grass well enough, but not grain crops. The cases of this kind which have come under my notice have been chiefly thin soils recently reclaimed and naturally deficient in lime. On examining both soil and subsoil I found the quantity of lime present so small as at once to show, at least, that excess of lime is not the cause of the continuance of the evil." . . . "Precisely similar effects are known to be produced on the same soils by the immoderate use of whale blubber, fish refuse, and slaughter-house offal." This account, written seventy years ago, almost exactly describes the experience of the present writer. Similar effects are, at the present day, sometimes ascribed to lime-burning, and sometimes to the use of fish offal, mussel shells, and similar materials. In one case a soil, said to have been lime-burned, and on which it was said oats would not grow, was examined by the writer, and it was found that, instead of containing any excess of lime, it was very deficient in that constituent, and appeared to urgently need liming. Some trial plots of oats were laid out upon it, and it was found that they grew quite normally, and gave a good crop where well manured.

The so-called lime-burning of land, while it may offer a case for investigation as to its real causes, does not seem to amount to any very good reason for departing from the practice of liming. The other reasons given appear to be equally unsound. It may be worth while to examine the principal of them a little further.

The labour difficulty should be capable of solution by the methods which have served in other cases. Labourers will not reap and mow as they did fifty years ago, but the labour difficulty here has been solved by the use of efficient modern labour-saving machinery. If liming is to be again generally resorted to, machines will soon be placed on the market for distributing lime with the minimum of trouble and expense. Further, it is not necessary to use burnt lime. Carbonate of lime is much less unpleasant to handle, and where friable carbonate of lime

cannot be obtained naturally or as a local by-product, limestone can be ground to powder by modern machinery, no matter how hard it is.

As to the question of expense, that can be answered by making experiments on the use of lime on soils deficient in this constituent, and finding whether its application causes sufficient improvement to pay for the lime. This is the method which has been used with other manures. In the case of lime, however, the result should not be measured on one crop alone, but upon a series of crops, for the effect of lime is gradual and long continued. Also, in soils which have been long unlimed it may be necessary to give a considerable dressing before any result is obtained, for many Scotch soils are so sour that three or four, or even more, tons of carbonate of lime may be required to neutralise the sourness. Such soils may require a dressing, therefore, of two or three tons of burnt lime per acre, or four or five tons per acre of carbonate of lime, before really good results are obtained. An example of a soil on which two tons of burnt lime, or four tons of carbonate of lime, was not sufficient to cure the sourness is given below.

Loss of Lime from the Soil.

The commonest reason given for the neglect to use lime seems to be that in modern practice its place is taken by quicker acting manures. This is quite a fallacy. Lime has its own work to do in the soil, and this cannot be done by other manures. Indeed, the use of many other manures, such as sulphate of ammonia, superphosphate, and dung itself, increases the necessity for the use of lime. Certain manures, such as basic slag, supply a little lime to the soil. But the quantity supplied in this way is very small, and cannot do more than act as a palliative. It would require five or six cwt. of ordinary basic slag to supply as much lime available as a base in the soil as is contained in a single cwt. of burnt lime of good quality. Far more lime than this is lost from the soil every year in the drainage. The principal use of lime in the soil is not to feed the plant, but to keep the soil sweet and healthy and in suitable condition for those various bacterial actions by which other plant-foods are made available to crops. It also helps to fix other valuable substances, like ammonia, potash, and soluble phosphates in the soil, and to prevent them being lost in the drainage. In performing these various functions a good deal of lime is itself necessarily washed away as a waste product and lost in the drainage. Analyses of drainage waters from cultivated soils show that lime is always the principal solid constituent in such water, and further, that there is always

more lime in drainage water from manured land than in the drainage from part of the same land which has not been manured.

From the results of experiments it has been estimated that the average loss per acre per annum in the drainage water, throughout England and Wales, is not less than 500 lb. of carbonate of lime. In the case of Scotland there is little experimental evidence on which to base a figure, but it is probable that the loss of lime in our moist climate is not, on the average, less than in England. Probably in the case of manured soils 500 lb. of carbonate of lime is an under-estimate. These figures mean that at least 500 lb. of carbonate of lime, or 280 lb. of quick-lime, per acre per annum, should be applied in order merely to maintain the supply of available lime in the soil. In other words, 1 ton of commercial burnt lime of good quality, or $1\frac{1}{4}$ tons of good quality chalk or burnt limestone, should be applied once in seven years, merely to maintain the lime of the soil. Where the soil is naturally well supplied with carbonate of lime it is not necessary to add it artificially, but such soils are very rare in Scotland. On the contrary, our soils are, as a rule, naturally deficient in lime, and it is very common to find them actually sour in reaction, owing to lack of this constituent. Such sour soils cannot produce the maximum crops of which they are capable, and are subject to finger-and-toe, and to many noxious weeds which are favoured by soil sourness.

As has been already mentioned, lime may be used either in the form of quick-lime or as carbonate of lime. In most cases the one is as good as the other, provided an equal weight of lime be used, and therefore the purchaser should be guided by the price, and should, generally speaking, buy the one in which he can obtain his lime more cheaply. Good burnt lime generally contains from 70 to 90 per cent of lime in useful forms—that is, in the forms of oxide and carbonate. On the other hand, good samples of carbonate of lime contain only 40 to 50 per cent of lime, as a general rule. Carbonate of lime, therefore, to be equally cheap, should not cost much more than half the price of burnt lime, and, to be really valuable, it should be in the form of a fine powder.

A valuable Waste Product.

As already stated, large quantities of carbonate of lime, of excellent quality for agricultural purposes, are annually produced in Scotland as a by-product from the causticising plant of paper-works. This material is practically all going to waste at present. The following tables show its composition:—

TABLE I.
ANALYSES OF WET WASTE CARBONATE OF LIME.

	I. Inverurie.	II. Inverurie.	III. Culter.	IV. Culter.	V. Stoneywood.
	per cent.	per cent.	per cent.	per cent.	per cent.
Moisture	49·64	47·84	38·29	47·97	43·78
Carbonate of lime .	37·31	44·04	51·93	45·64	49·91
Lime in other forms .	9·35	3·30	0·87	0·32	6·80
Alkalinity (as NaOH)	8·25	2·89	2·24	1·61	3·65
Silica	0·64	2·15	2·86	2·78	1·70

Nos. I., II., and V.—The alkalinity was due to free lime.

Nos. III. and IV.—The alkalinity was due to carbonate of soda and caustic soda. There was no free alkaline lime.

TABLE II.
ANALYSES OF DRIED WASTE LIMES.

	I.	II.	III.	IV.	V.
Moisture	4·02%	1·23%	12·27%	9·51%	13·48%
Carbonate of lime .	66·50	88·33	68·08	60·84	74·20
Lime in other forms .	13·89	3·48	3·74	11·60	1·45
Alkalinity (as NaOH)	16·08	0·63	4·37	6·76	0·92
Silica	2·40	1·65	3·48	2·48	4·97

No. I. contained alkaline lime equal to 11·26% CaO: equal to 14·87% Ca(OH)₂: and practically no soda.

No. II. contained no free alkaline lime, and very little soda.

Nos. III. and V.—The alkalinity was due to soda and carbonate of soda.

No. IV., like No. I., contained much alkaline lime.

The analyses in Table I. represent the composition of this by-product as it is obtained from the dump heaps of certain paper-works. In this state it contains a considerable percentage, generally between 40 and 50, of water. It is soft and sticky, and cannot be readily spread. It can, however, generally be obtained for nothing in this state, and is well worth using by those in the neighbourhood of works where it is produced.

If spread in dry weather it soon becomes sufficiently dry to be spread by means of chain-harrows, and several farmers have used it in this way with good results. Table II. gives analyses of the same material after it has been dried. It then forms a very fine powder, which spreads well, and can easily be thoroughly incorporated with the soil. It is now, on the suggestion of the writer, being prepared in the dry state by some of the paper-works in the neighbourhood of Aberdeen, and sold at a price calculated to cover the cost of drying. At this price it is a cheap form of lime, and has been used with excellent effects by several farmers.

Results of Field Trials.

Field experiments were carried out by the writer with this substance, as well as with ordinary lime-shells and gas lime. These experiments were all conducted on land which is very deficient in lime, and on which the previous turnip crop had been badly affected with finger-and-toe. The experiments were conducted primarily as part of a study of the effects of lime upon finger-and-toe disease. Incidentally they illustrate the effect of this waste carbonate of lime in checking finger-and-toe and increasing the turnip crop. A part of the results of three of the experiments is shown in Table III., which not only gives the crop per acre obtained from the different plots, but also gives figures showing the incidence of the disease on these plots.

The table shows that large increases of crop were obtained from each form of lime used in two of the experiments, Greenhowe and Barra, and that in both these cases the increases given by waste carbonate of lime were greater than those given by shell lime. In the third experiment the increase of crop obtained by the use of lime was not so marked.

The amount of disease was estimated by individually examining, on the field, several hundred bulbs from each plot, and classifying these into *sound turnips*, or those on which no disease was noticed; *slightly diseased turnips*, or those where either the bulb was not touched by the disease, which was confined to the roots, or where the bulb, if attacked, was not rotted by the disease; *badly diseased turnips*, or those in which the bulb was badly or completely rotted by the disease.

It does not follow that bulbs classed as sound were quite free from disease. In pulling the bulbs many of the roots were left in the ground, and if the disease were confined to these it would not be noticed. The table shows that in two of the experiments, Greenhowe and Barra, the amount of disease was greatly diminished by the use of lime, and especially of waste carbonate of lime. Little reduction of disease was produced by the use

TABLE III.

FINGER-AND-TOE EXPERIMENTS—GREENHOWE, BARRA, AND BLACKHILLS.

	No Lime.	Waste Carbonate of Lime.		Shell Lime.		Gas Lime.	
		4 tons per acre.	4 tons per acre.	1 ton per acre.	2 tons per acre.	2 tons per acre.	4 tons per acre.
GREENHOWE—	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.
Weight of bulbs per acre . . .	7 5	12 16	...	9 2	...	11 19	...
Increase over no lime . . .	...	5 11	...	1 17	...	4 14	...
Sound turnips, per cent . . .	42·5	70·0	..	61·5	...	47·0	...
Slightly diseased, per cent . . .	37·0	29·0	...	34·0	...	39·8	...
Badly diseased, per cent . . .	20·5	1·0	...	4·5	...	13·2	...
BARRA—	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.
Weight of bulbs per acre . . .	12 8	15 5	17 5	...	13 6	15 15	16 10
Increase over no lime . . .	...	2 17	4 17	...	0 18	3 7	4 2
Sound turnips, per cent . . .	41·8	72·2	82·6	...	60·6	59·1	58·6
Slightly diseased, per cent . . .	36·0	18·5	14·4	...	24·6	28·0	24·0
Badly diseased, per cent . . .	22·2	9·3	3·0	...	14·8	12·9	17·4
BLACKHILLS—	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.	tons. cwt.
Weight of bulbs per acre . . .	18 8	19 12	...	...	19 5	...	18 6
Increase over no lime . . .	...	1 4	...	...	0 17	...	...
Sound turnips, per cent . . .	26·1	19·1	...	...	25·3	...	36·6
Slightly diseased, per cent . . .	69·7	75·5	...	...	72·6	...	58·7
Badly diseased, per cent . . .	4·2	5·4	...	...	2·1	...	4·7

of gas lime. Similar results with gas lime have also been found by others.

In the case of the third experiment, Blackhills, the use of lime did not effect any reduction of the disease. This experiment is included here as an example of a soil on which even

four tons of waste carbonate of lime, or two tons of shell lime, was not sufficient to neutralise the acidity of the soil. The soil was a very sour one, and when it was found that neither waste carbonate of lime nor shell lime checked the disease, as in the other experiments, the soils to which these had been applied were tested and found to be still acid.

The waste carbonate of lime used in all three experiments was the dried material. That used in the Blackhills experiment contained 75 per cent of carbonate of lime. The shell lime used was of good quality, and contained about 80 per cent of oxide of lime. Yet neither of these was sufficient in the quantities used to neutralise the acidity of this very sour soil, and therefore had little effect in curing finger-and-toe disease in turnips.

In former times very heavy dressings of lime were used, but the dressings were not given often. It was usual to apply such dressings as four or five, or even six, tons of burnt lime per acre. Thus in Loudon's Encyclopedia, already quoted, it is stated that shell lime is generally applied in quantities of from 100 to 500 bushels per acre. "About 160 bushels are generally considered a full dressing for lighter soils, and 80 to 100 bushels more for heavy adhesive soils."

Since ground-lime was introduced it is the usual practice of those who use any lime to give small dressings, such as five to ten cwt. per acre. Where such are given, they should be given often if the lime of the soil is to be maintained; and in very many cases, where the soil has not been limed for many years, and especially where it exhibits an acid reaction, a heavy dressing of several tons per acre, such as used to be given in the "good old days," is needed to restore the land to a sweet, healthy condition. In such cases it would probably be safe, in the case of light thin soil, to give the first heavy dressing in the mild form of carbonate rather than in the caustic form of lime shells.

PERSONS ENGAGED IN AGRICULTURE.

By WILLIAM E. BEAR, Magham Down, Hailsham.

OUR Census is so imperfect that it does not afford data for even an approximate estimate of the agricultural population. Since 1871 no enumeration of landowners has been attempted. That enumeration had never been complete, because only those who had no other avocation than landowning were instructed to describe themselves as landowners. So collected, the return was worse than useless, because it was misleading. Nothing, however, could be simpler, when a census is being taken, than to have a division of the schedule set apart for a return of owners of land, with a statement as to area in each case, and as to whether it is agricultural or not. Such a return would be extremely interesting to a large number of people, and valuable in the consideration of many public questions. At present, presumably, agricultural landowners who have no other avocation under which they wish to class themselves are included in the unoccupied division, although many of them are very much occupied with their estates, and are farmers on their own account as well as landlords.

It follows that the Census does not give a complete return of what it professes to show—namely, the number of persons “engaged in agriculture.” That number, of course, would fall far short of the total agricultural population, which would include the families of the persons actually engaged in the industry, non-workers as well as workers. The larger total, I believe, could be estimated from the Census schedules if the smaller total were a complete one. In one respect the latest agricultural enumeration is more nearly complete than any previous one. In 1911, for the first time, persons who had returned themselves as merely “labourers” were required to describe the character of their employment. Before that year they had been entered in the census tables as “general labourers,” and it was admitted officially that many of them were agricultural labourers. Consequently the number of agricultural workmen had always been put too small. The effect of the attempt to classify these men is to be seen in the reduction of “general labourers” in England and Wales from 409,773 in 1901 to 295,343 in 1911.

In some respects, on the other hand, the agricultural group in 1901 and 1911 has been made less nearly complete than it had been in some earlier years. For example, up to 1871

farmers' wives, the great majority of whom do more or less farm work in the dairy, in providing for in-door farm servants, or otherwise, were included. They have been omitted since 1871, and it is quite clear that few if any of them are included in the division of "relatives assisting in the work of the farm." Indeed, in the General Report for 1901 it was stated that they were not enumerated, and presumably this was the case also in 1911. Again, drovers, specified in 1891, have not been returned since that year, unless they are included among "others." Similarly farm pupils, at one time separately enumerated, have not been mentioned in recent census reports, though they are possibly included under the heading just named. More important is the removal of grooms and coachmen in recent returns to the domestic class. Those of them who live in rural districts are mainly engaged in agriculture, and supported by that industry. Farmers' grooms, as a rule, do odd jobs on the farm and work in the garden. Many of them feed pigs, and milk the cow or two kept for the household supply of milk and butter.

It must be admitted that there is some difficulty in deciding as to the propriety of including some classes of men, who are more or less engaged in agriculture, in the agriculture group. For example, dealers in and salesmen of live stock were included in 1891, but not since. A large majority of the dealers hold more or less land, and therefore are partly farmers, and all of them may be said to be engaged in agriculture and to derive their living therefrom. Salesmen, on the other hand, are no more properly in the agricultural division than corn-merchants are. Veterinary surgeons also were at one time included in the agricultural group, and those of them who live in rural districts are mainly, but not generally entirely, engaged in and supported by agriculture. Knackers, omitted since 1891, can hardly be regarded as more agricultural than butchers, while cats'-meat men and keepers of dogs and birds should never have appeared in the agricultural section.

Up to 1891 there was no uniformity in the classification of persons engaged in agriculture, so that accurate comparison of the decennial enumerations was impossible. Fortunately the grouping for 1901 and 1911 has been the same for Great Britain, though not altered since 1891 for Ireland.

If it is desired to ascertain the number of persons engaged on the land, horticulture should be treated as a branch of agriculture. It is partly so treated in the Census, market-gardeners and persons engaged in nurseries and in seed or flower farms being included in the agricultural section. Domestic gardeners, however, are excluded, although, I think, they should be included, because they are engaged in and

supported by the cultivation of land. It is no disadvantage to the nation, but rather an advantage, to have labour diverted from farming to gardening, and consequently it is not fair to represent that agricultural employment has been reduced by such diversion. The main point of consideration is the number of persons supported by the cultivation of the land.

It is not of great importance to include creamery workers, as their number in England and Wales is small. Still, as they are employed mainly by dairy farmers, co-operating to have the work of butter-making done in creameries instead of in their own dairies, they should be included.

As there is some difference of opinion in reference to the inclusion of certain groups of workers on the land in the division of "persons employed in agriculture," my principal tables cover only those which are in the agricultural division of the Census. The figures relating to other groups employed on the land are given separately, and can be added or left out in accordance with the views of each reader.

ENGLAND AND WALES.

Turning first to England and Wales, the following table gives as complete an enumeration of the number of persons engaged in agriculture in 1901 and 1911 as the details of the two Census Reports allow to be made:—

PERSONS ENGAGED IN AGRICULTURE IN ENGLAND AND WALES.

	1901.		1911.	
	Males.	Females.	Males.	Females.
Farmers and Graziers	202,751	21,548	208,761	20,027
Relatives assisting in Farm Work	89,165	18,618	97,689	56,856
Bailiffs and Foremen	22,623	39	22,141	25
Shepherds	25,354	12	20,838	31
Agricultural Labourers and Farm Servants in charge of Cattle	81,302	3,797	69,094	4,210
Agricultural Labourers and Farm Servants in charge of Horses	154,377	5	128,122	—
Agricultural Labourers and Farm Servants undistinguished	348,072	8,149	425,063	5,857
Gardeners (not domestic), Nurserymen, Seedsmen, and Florists	123,125	5,104	140,103	4,202
Woodmen	12,034	1	12,301	2
With Agricultural Machines	6,480	65	7,286	60
Others	5,757	226	9,117	330
Total in Agricultural Division of Census	1,071,040	57,564	1,140,515	91,600

INCREASES.

	Males.	Females.	Both Sexes.
Ten years to 1911	69,475	34,036	113,511
Per cent	6·49	59·13	10·06

Male domestic gardeners increased from 87,900 in 1901 to 118,739 in 1911, and females from 36 to 103; male creamery workers from 568 to 1264, and females from 12 to 561; game-keepers increased from 16,677 to 17,148; and grooms and coachmen in rural districts decreased from 38,723 to 37,819. If these were added, to get at the total of persons engaged on the land, the total of males would be 1,214,908 for 1901 and 1,315,485 for 1911, while that of females would have been 57,612 for 1901 and 92,265 for 1911. The percentage increases would have been shown to be very slightly different from those given above. It is certain that all small holders are not included in "farmers and graziers," because there were 435,300 holdings over one acre in 1911, and although many farmers occupy more holdings than one, this cannot account for all the difference between 208,761 and 435,300. No doubt, many of the smallest holders are workers on other men's land, and are returned as agricultural labourers, while others are market-gardeners, or growers of flowers or seeds. Adding the male and female farmers and graziers, we have 224,299 for 1901 and 228,788 for 1911, showing an increase of 4489 in the ten years.

A considerable increase is shown in the number of relatives of farmers assisting in the work of the farm, particularly in that of females. This may be due either to the advance of dairy farming or to greater care in collecting the returns.

A small decrease in farm bailiffs and foremen is shown in the table. In 1901 a considerable increase over the number for 1891 was shown, due probably to the addition of the word "foremen" to "bailiffs."

Male shepherds have fluctuated curiously in number, the returns being 22,844 for 1881, 21,573 for 1891, 25,354 for 1901, and 20,838 for 1911.

There is an increase in the number of males returned as "agricultural labourers and farm servants." The totals are 583,751 for 1901, and 622,279, indicating an increase of 38,528. More than this increase is shown for ordinary farm labourers by themselves, those in charge of horses or cattle having been reduced in number. It may be assumed that the apparent increase is entirely due to the care taken in 1911, for the first time, to classify men who have previously returned themselves vaguely as "labourers." In all probability a decrease would otherwise have been shown for 1911.

Some obscurity in the portion of the census table for 1911 relating to gardeners (not domestic), nurserymen, seedsmen, florists, and market-gardeners has been obligingly cleared up in reply to an inquiry made at the Census Office. As details for 1901 were not stated, those for 1911 are not inserted in the table given above. For the latter year the total of 140,103

males is made up of 28,736 nurserymen, seedsmen, and florists, 35,811 market-gardeners (including labourers), and 75,549 other gardeners (not domestic), largely consisting of men employed on fruit farms. The corresponding total of 4202 for females consists of 1170 nurserymen, seedsmen, and florists, 2449 market-gardeners (including workers), and 583 gardeners (not domestic). The totals for the group show an increase of 16,978 males, and a decrease of 902 females. Employers and employed are not distinguished in the group for 1911, as they are for 1901, in any volume of the Census for 1911 issued up to the time of writing. In 1901 the employers in this group numbered 7153, and the employed, men working on their own account, and others, numbered 115,972. If the same proportions be assumed for 1911, the employers may be put at 8139, and the employed, &c., at 131,964.

Inquiry at the Census Office has elicited the information that, as far as possible, shopkeepers were kept out of the lists of seedsmen and florists; but better designations would be "seed-growers" and "flower-growers."

To what extent fruit farmers are returned as "market-gardeners" is uncertain. Many of them grow hops and other farm crops, more or less extensively, as well as fruit, and these would not return themselves as market-gardeners. They would be more likely to describe themselves as "farmers" or "fruit-growers." With respect to their work-people, it is obvious that an enumeration made in the first week of April would not cover many, if any, of their casual workers. To cover fruit-pickers, many thousands would have to be added to the number of workers in the group now under notice. These pickers, however, largely consisting of townspeople, would not properly be included in the agricultural division of the Census, as fruit-picking is not their main occupation.

Under "Others" and persons with agricultural machines together, employers numbered 1007 in 1901, and may be put in like proportion at 1350 for 1911, leaving 13,230 workers for the former year and 15,053 for the latter. These figures are of importance for estimating the total number of men employed in agriculture.

The figures for agricultural machine owners and attendants and "others" complete those of the agricultural division as given in the Census Reports. The incomplete totals are 1,071,040 males and 57,564 females for 1901, and 1,140,515 males and 91,603 females for 1911, showing increases of 69,475 males and 34,036 females.

The additions made to complete, as far as possible, the number of persons engaged on the land, and taken from other parts of the Census Reports, appear to me entirely warranted.

Gamekeepers were included in the agricultural division up to 1901, but have been removed to the domestic group for 1911. They have increased, but not nearly as much as in either of the two preceding decades. They numbered 12,633 in 1881, 13,814 in 1891, 16,677 in 1901, and 17,148 in 1911. The increase in thirty years was 4515, or a little under 36 per cent.

The apparent total increase shown in the table, as has been intimated, must be regarded as the result of more careful enumeration on the whole, although for the groups covering fruit farms, market-gardens, and private gardens, the increases are probably actual—at least mainly.

One point which remains to be noticed is that the enumeration of female workers cannot be regarded as nearly complete. The omission of farmers' wives, formerly included, has already been noticed. But at one time domestic servants in farmhouses were also included, whereas only those who are hired as "farm-servants," a small minority of the total number of female servants in English farmhouses, are admitted. The great majority do dairy work, more or less.

Deducting farmers and graziers, their relatives assisting them, and the number of employers stated in other sections for 1901, the number of male workers for wages or on their own account is 915,839. The corresponding deductions for 1911 leave 1,000,896 male labourers. Many of the farmers' relatives ought to be included in the workmen's class; but some of them do not work regularly, and many have no wages beyond board, lodging, clothing, and a little pocket-money. If they be included, we have 1,005,004 workmen for 1901 and 1,098,585 for 1911, giving an apparent increase of 93,581, which is probably due to the improved accuracy of the classification, particularly in relation to men who were returned vaguely as "labourers" before 1911. The enumeration of females engaged in agriculture is so incomplete that it is not worth while to go into similar details concerning them.

Although the total agricultural population, which is not to be ascertained from the Census, has probably continued to decline, that of the rural districts has continued to increase. For 1891 the total was 7,257,239, and there was an increase to 7,469,488 in 1901, and to 7,907,556 in 1911. In spite, then, of the migration and emigration of agricultural labourers, it cannot be said that the rural districts of England are being deserted.

SCOTLAND.

The classification of the agricultural division of the Census for Scotland has been the same as that for England and Wales in 1901 and 1911, except that crofters are included for Scotland

in the summary table for 1911, and in the county tables for 1901. Whether all or many small holders, in addition to crofters, are included with farmers and graziers or not is uncertain. As other remarks relating to the improvement of classification and yet the incompleteness of the agricultural division of the Census of England and Wales are similarly applicable to Scotland, there is no need to repeat them.

The compilation given below for Scotland is similar to the one presented for the rest of Great Britain:—

PERSONS ENGAGED IN AGRICULTURE IN SCOTLAND.

	1901.		1911.	
	Males.	Females.	Males.	Females.
Farmers and Graziers	35,294	4,285	29,939	2,666
Relatives assisting in Farm Work .	14,211	9,615	11,619	5,557
Crofters	10,279	3,537	14,027	4,046
Relatives assisting on Crofts . .	3,339	2,787	5,008	5,117
Grieves and Foremen	4,650	5	7,250	29
Shepherds	9,647	9	9,041	11
Agricultural Labourers and Farm Servants in charge of Cattle .	11,617	4,956	13,806	6,127
Agricultural Labourers and Farm Servants in charge of Horses .	34,352	4	35,475	85
Agricultural Labourers and Farm Servants undistinguished . .	27,825	14,836	22,260	8,785
Gardeners (not domestic), Nursery- men, Seedsmen, and Florists .	11,610	498	10,517	502
Woodmen and Foresters . . .	4,126	14	3,621	15
With Agricultural Machines . .	417	1	315	6
Others	—	—	—	—
Total in Agricultural Division of Census	169,130	40,581	165,689	33,057

DECREASES.

	Males.	Females.	Both Sexes.
Ten years to 1911	3,441	7,524	10,965
Per cent.	2·03	18·54	5·23

Male domestic gardeners increased from 7686 to 10,613, and females from 12 to 49; male creamery workers from 189 to 218, while females decreased from 868 to 47; gamekeepers increased from 5367 to 5908, with 11 females added for the latter year against none for the former; and grooms and coachmen in the rural districts decreased from 1520 to 1475. If these were added to get at the total employed on the land, the total of males would be 183,892 for 1901 and 183,903 for 1911, while that of females would be 41,461 for 1901 and 33,164 for 1911.

Crofters were included with farmers and graziers in the summary table of the Census of 1901, but have been separated

from them in the compilation just given by adding up the returns of crofters for the several counties for which they were then returned. Similarly the relatives assisting crofters have been separated from those assisting farmers and graziers.

A considerable decrease of both male and female farmers and graziers appears to have taken place since 1901, while the number of crofters has increased. Together, the number of male and female occupiers of farms and crofts was 53,395 in 1901 and 50,775 in 1911, showing a decrease of 2617. The indication is that farms or crofts, or both, have been aggregated to some extent since 1901, or that some holdings that were cultivated in 1901 have gone out of the farmed area or into their owners' hands. Relatives assisting farmers have decreased, while those assisting crofters have increased.

The distribution of crofters has changed so greatly since 1901 that some details concerning it may prove interesting to many readers. In 1901 crofters were enumerated in only seven counties—namely, Shetland, Orkney, Caithness, Sutherland, Ross and Cromarty, Inverness, and Argyll. In 1911 they were enumerated in twenty-six other counties. It does not follow that there were no crofters in any of the additional counties in 1901, but only that they were not considered crofting counties under the Act of 1886. It is somewhat remarkable that, although there has been a great increase in the total number of crofters, their number has been reduced in some of the counties for which they were enumerated in 1901, as shown below:—

CROFTERS OF BOTH SEXES.

	1901.	1911.
Shetland	1530	1749
Orkney	444	931
Caithness	972	1098
Sutherland	1653	1545
Ross and Cromarty	4407	3773
Inverness	4018	3846
Argyll	792	763

The additional counties in which crofters were enumerated in 1911 are named below, with the total of both sexes returned for each: Aberdeen, 2135; Ayr, 13; Banff, 656; Berwick, 3; Bute, 40; Clackmannan, 6; Dumbarton, 11; Dumfries, 75; Edinburgh, 3; Elgin, 287; Fife, 73; Forfar, 275; Haddington, 2; Kincardine, 232; Kinross, 12; Kirkcudbright, 29; Lanark, 36; Linlithgow, 3; Nairn, 56; Peebles, 7; Perth, 285; Renfrew, 1; Roxburgh, 17; Selkirk, 7; Stirling, 15; Wigton, 89.

It is not easy to imagine why the considerable increase in the number of grieves and foremen has taken place unless the

explanation be that the introduction of the term "foremen," which led to an increase when first included in 1901, has continued to act in like manner. Male shepherds have fallen off by more than 600. It will be noticed that the number of men in charge of cattle and horses alike has increased at the expense of undistinguished workmen. The totals of male "agricultural labourers and farm servants" are 73,794 for 1901 and 71,541 for 1911, showing a decrease of 2253.

Details of the group of "gardeners (not domestic), nurserymen, seedsmen, and florists" were not given for 1901, but are made up as follows in the table for 1911: Nurserymen, seedsmen, florists, 1652 males and 227 females; market-gardeners, including labourers, 2412 males and 185 females; other gardeners (not domestic), 6453 males and 90 females. As in the case of England, it is uncertain whether fruit-growers are included under the term "market-gardeners." Judging from the considerable number of nurserymen, seedsmen, and florists, it may be suspected that many of them are distributors and not growers, in which case they should no more be in the agricultural division than corn merchants, who are properly put in the commercial list of avocations.

The totals of the agricultural division, as given in the Census Reports, show considerable decreases of males and females alike. These totals for 1911 are precisely as given in the Census table. Males and females together amount to 198,746, whereas the total is put at 199,888 in the introduction to the industries tables on page lxxxvii. vol. ii.

The reasons for giving the figures supplementary to the table are given in relation to England and Wales, and need not be repeated.

Deducting from the totals of males, farmers and graziers, their relatives assisting them, crofters and their relatives, and employers in various other groups, the number of workmen stands at 119,678 for 1901 and 122,135 for 1911. Or if relatives assisting be included, the corresponding numbers are 137,228 and 138,762.

As in the case of England and Wales, the Census Reports do not afford data for estimating the entire agricultural population. Also, as in the case of England and Wales, the decline in the number of persons engaged in agriculture is not accompanied in Scotland by a decrease in the population of the rural districts. Since 1901 changes have been made in the division of burghal and extra-burghal areas. But on page x. of vol. ii. it is stated that if a comparison is made between the population of the area now included in the extra-burghal districts of 1901 and 1911, an increase of 19,802, or 6.6 per cent, is brought out.

IRELAND.

Unfortunately the improvements in the grouping of the agricultural classes in Great Britain has not extended to the Irish Census. There has not been any attempt in Ireland to induce persons who describe themselves "labourers" to state the branch of industry in which they are employed. Consequently, as a footnote to the table of the agricultural group states, the majority of the men given as "general labourers" in another section of the tables are agricultural labourers. Probably a fair approximation would be reached by adding three-fourths of these men to the agricultural class. On the other hand, such persons as knackers, cats'-meat dealers, stock dealers, and salesmen, unless they are also farmers, are no more appropriately included in the agricultural group than butchers or ordinary auctioneers would be; and it is a question whether veterinary surgeons should be included. Dog and bird dealers should certainly be excluded. But farriers, drovers, and vermin destroyers, included in the Irish, but not in the British, agricultural group, are practically engaged in agriculture, as also are farriers in rural districts. All that can be done is to take the figures for the Irish divisions corresponding with those of England and Scotland, for the sake of uniformity:—

PERSONS ENGAGED IN AGRICULTURE IN IRELAND.

	1901.		1911.	
	Males.	Females.	Males.	Females.
Farmers and Graziers	328,853	70,534	328,473	54,694
Relatives assisting in Farm Work	214,261	—	169,246	—
Bailiffs and Foremen	1,892	—	1,519	—
Shepherds	5,460	160	3,759	52
Agricultural Labourers and Farm Servants	298,835	15,800	302,105	4,922
Gardeners (not domestic), Nurserymen, Seedsmen, and Florists .	5,039	137	5,900	131
Others	2,780	573	2,271	267
Woodmen	220	—	263	—
With Agricultural Machines .	38	—	52	—
Total in Agricultural Division of Census	857,378	87,204	813,588	60,066

DECREASES.

	Males.	Females.	Both Sexes.
Ten years to 1911	43,790	27,138	71,928
Per cent	5.11	31.12	7.62

Male domestic gardeners increased from 4329 in 1901 to 4534 in 1911 and females from 7 to 10; male creamery workers

increased from 1021 to 1091, while females decreased from 434 to 155; gamekeepers decreased from 1353 to 1238; and grooms and coachmen in rural districts increased from 2584 to 2934. If all these were added to make up the total of workers on the land, the total of males would be 866,665 for 1901 and 823,385 for 1911, while the corresponding totals for females would be 87,645 and 60,231.

While there is no considerable reduction in the number of male farmers and graziers, females have fallen off greatly. No confidence can be felt in the great apparent decrease in male relatives assisting farmers and graziers, while the omission of female assistants in 1901 and 1911 alike leaves a quite unnecessary gap in the returns.

The great reduction in the number of shepherds is in accordance with that of sheep, which fell from 4,378,750 in 1901 to 3,907,436 in 1911, showing a decrease of 471,314. Other employed classes show a small increase on the whole. But the considerable decreases in the total of males in the Census agricultural division, and in the larger total alike, do not seem consistent with the undoubted advance of agricultural prosperity in Ireland, unless the apparent inconsistency may be explained by the diversion of arable land to pasture. As to the totals of females, they are so obviously erratic that they may be ignored, and for that reason the figures for both sexes are not trustworthy.

ISLANDS IN THE BRITISH SEAS.

The totals for the small islands corresponding with those given for the main divisions of the United Kingdom are as follows:—

	1901.		1911.	
	Males.	Females.	Males.	Females.
Isle of Man . . .	3,421	188	3,737	617
Jersey	4,441	204	4,761	594
Guernsey, &c. . .	4,458	97	5,013	342
Totals	12,320	489	13,511	1,553
Both Sexes	12,802		15,054	

INCREASES.

	Males.	Females.	Both Sexes.
Ten years to 1911	1,191	1,054	2,282
Per cent	9·69	215·54	17·00

Agricultural prosperity is indicated in each of the small islands by the large increases in both males and females en-

gaged in agriculture. The totals in the agricultural section of the Census for the main divisions of the United Kingdom are shown in the next table:—

PERSONS ENGAGED IN AGRICULTURE IN THE UNITED KINGDOM.

	1901.		1911.	
	Males.	Females.	Males.	Females.
England and Wales	1,071,040	57,564	1,140,515	91,600
Scotland	169,130	40,581	165,689	33,057
Ireland	857,378	87,204	813,588	60,066
Small Islands	12,320	489	13,511	1,553
Grand Totals	2,109,868	185,838	2,133,303	186,276
Both Sexes	2,295,706		2,319,579	

INCREASES.

	Males.	Females.	Both Sexes.
Ten years to 1911	23,435	438	23,873
Per cent.	1·11	0·23	1·04

The larger totals for persons employed on the land are 2,277,785 males and 187,207 females in 1901, 2,336,284 males and 187,213 females in 1911, 2,464,992 of both sexes in 1901, and 2,523,497 in 1911, showing increases of 58,499 males, 6 females, and 58,505 of both sexes. Although the increases are not large, it is something to have the declines shown for many previous census years arrested; for, although the apparent augmentation in the number of persons engaged in agriculture may be entirely due to improved classification, the previous decline has at least been reduced, if not stopped. In compilations made on previous occasions, correcting the changes in classification as far as was possible, the decreases of persons engaged in agriculture (including horticulture) in the United Kingdom were 4·60 per cent for males, 19 per cent for females, and 5·75 per cent for both sexes in the decade ended in 1891, while the corresponding decreases in the ten years up to 1901, in the same order, were 10·24, 27·96, and 11·66 respectively. As before explained, the enumeration of females has never been complete, and the figures for males alone are approximately trustworthy. The decreases in the number of agricultural labourers up to 1901 had been grossly exaggerated in public speeches and writings, in consequence of basing them on the enumeration of "agricultural labourers and farm servants" alone.

Considering the intensity of the agricultural depression which had prevailed for thirty years before it abated appreciably, the increased use of labour-saving machinery, and the conversion

of a great area of arable land to pasture, the wonder is that the decline in the number of persons engaged in agriculture had not been greater than it was, according to the Census Reports, before it became arrested in the latter part of the last decade.

It will be observed that while the number of farmers, of both sexes together, has increased considerably in England, it has decreased in large proportion in Scotland and Ireland. The English increase must be mainly due to the multiplication of small holders, while the Scottish decrease may be in part attributed to the more precise distinction between farmers and crofters in 1911, and in Ireland there must have been some consolidation of farms.

MILK RECORDS.

ELEVENTH YEAR—RECORD OF 22,816 COWS.

By CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow, and WILLIAM LENNOX, N.D.D., Supervisor of Milk Records, West of Scotland Agricultural College.

THE Scottish Milk Records Committee has continued its work in 1913.

During this year it consisted of the following members:—

Name and Address.	Representative of
Mr Alex. Cross of Knockdon, 19 Hope Street, Glasgow	} Highland and Agricultural Society.
Mr Charles Douglas of Auchlochan, Lesmahagow	
Mr Thos. C. Lindsay, Aitkenbrae, Monkton	} Ayrshire Cattle Herd Book Society.
Mr James Howie, Hillhouse, Kilmarnock	
Mr A. W. Montgomerie, Lessnessock, Ochiltree	
Mr Matthew Hunter, Adamhill, Craigie	
Mr James Dunlop, Gree, Fenwick	
Mr Alex. M. Stevenson, Jeanfield, Symington, Ayrshire	
Mr James S. Paterson, Quhytewoolen, Lockerbie	} Annandale Milk Record Society.

Name and Address.	Representative of
Mr J. W. Inglis, Oakbank, Lamlash	{ Arran Milk Record Society.
Mr Arch. S. Black, Bogany, Rothesay	{ Bute & Lower Renfrew Milk Record Society.
Mr James S. Hunter, Machribeg, Campbeltown	{ Campbeltown Milk Record Society.
Mr W. T. R. Houldsworth, Kirkbride, Maybole	{ Carrick Milk Record Society.
Mr John Young, Skerrington Mains, Hurlford	{ Central Ayrshire No. 1 Milk Record Society.
Mr William Taylor, Fortacres, Dundonald	{ Central Ayrshire No. 2 Milk Record Society.
Mr Allan Stevenson, Parkhill, Mauchline	{ Central Ayrshire No. 3 Milk Record Society.
Mr David Wardrop, Knockterra, Cumnock	{ Cumnock Milk Record Society.
Mr Alexander Y. Allan, Aitkenbar, Dumbarton	{ Dumbarton Milk Record Society.
Mr John Murray, Kilfillan, Glenluce	{ Dunragit Milk Record Society.
Mr James Mather, Low Gainford, Fenwick	{ High Fenwick Milk Record Society.
Mr Andrew Gemmill, Aikenhead, Fenwick	{ Low Fenwick Milk Record Society.
Mr J. W. Miller, Lochhead, West Wemyss	{ Fife Milk Record Society.
Mr J. Weir, Daill, Islay	{ Islay Milk Record Society.
Mr Robert Wilson, Westwood, Dunlop	{ "John Spier" Milk Record Society.
Mr William Hosie, Gallowhill, Lenzie	{ Kirkintilloch Milk Record Society.
Mr F. J. Colledge, East Cairngoan, Drummore	{ Kirkmaiden & Stoneykirk Milk Record Society.
Mr John M'Caig, Belmont, Stranraer	{ Leswalt and Kirkcolm Milk Record Society.

Name and Address.	Representative of
Mr Gavin Hamilton, British Linen Bank, Lesmahagow	} Lesmahagow Milk Record Society.
Mr Arch. Crawford, Broughton Mains, Sorbie	
Mr William Wallace, Auchenbrain, Mauch- line	} Mauchline Milk Record Society.
Major J. A. Houison-Craufurd, Borland, Kilmarnock	
Mr James Barr, Glaisnick, Kirkcowan	} Newton Stewart Milk Record Society.
Mr James Moffat, Gateside, Sanquhar	
Mr Thomas Lammie, Steelpark, Ochiltree	} Ochiltree Milk Record Society.
Mr J. G. M'Myn, Kirkhouse, Kirkbean	
Mr H. W. B. Crawford, Chapmanton, Castle-Douglas	} Stewartry Milk Record Societies, Nos. 1, 2, 3, and 4.
Mr W. P. Gilmour, Balmangan, Kirk- cudbright	
Mr James Wallace, Chapelhill, Kirkcud- bright	
Mr John Paterson, Woodend, Balfron	} Strathendrie Milk Record Society.
Mr William Howie, Carnwadric, Thornlie- bank	
Sir Hugh Shaw Stewart, Bart., of Ard- gowan, Greenock	} Co-opted Members.
Mr Thos. Clement of Netherton: <i>office</i> — 64 Albion Street, Glasgow	
Mr James Dunlop, Scottish Board of Agri- culture, Edinburgh	
Mr John Drysdale, 5 St Andrew Square, Edinburgh	

Chairman—Sir Hugh Shaw Stewart, Bart.

Secretary and Treasurer—Mr John Howie: *office*—58 Alloway Street, Ayr.

Supervisor—Mr William M. Lennox: *office*—Alloway Chambers, Ayr.

Definition and Classification of Yields.

The lactations recorded in this report are those actually or practically terminating in 1913; and they have been classified on the same basis which was adopted in the previous year's report.

Experience confirms the view that the best unit to employ in the comparison of milk-yields of various qualities is that which reckons them in terms of gallons, estimated at 1 per cent of butter-fat; and the classification is the same in this as in last year's report. Yields whose quantity and quality taken together show a total of 2500 gallons, calculated at 1 per cent of fat, for cows, and 2000 gallons for heifers, are classed as "good"; while those which are below two-thirds of these amounts (1660 and 1330 gallons respectively) are classed as "bad." Those figures correspond in the case of fairly good milk at 3·5 per cent of butter-fat, to yields of over 714 gallons from cows, and 570 gallons from heifers in the "good" class, and of under 474 gallons from cows and 380 gallons from heifers in the "bad" class. This classification is found in practice to apply a fair criterion to cows in the various districts under review. It must, however, be kept in mind that no comparison worth making can be applied to the cattle of different parts of the country, on the basis of these or any other figures, since the varying conditions of climate and soil, and the periods at which cows calve in various districts, create differences which are such as to stultify any attempt at comparison.

As in former years, the statement of milk-yields in the Appendix to the Committee's Report is made in terms not of the hypothetical 1 per cent unit, but of the actual quantity and quality of milk given by the cows.

The period of every yield is definitely stated; so that the Appendix contains the fullest and clearest statement that can be made of the facts under review.

Administration.

During 1913 the Committee's work was administered, as in former years, through the Milk Record Societies, and by means of Grants of £900 from the West of Scotland Agricultural College, and of £40 from the Ayrshire Cattle Herd-Book Society.

Eight new societies have been formed during the year:—Arran, Central Ayrshire Nos. 2 and 3, Dumbarton, Low Fenwick, Fife, Kirkintilloch, and Newton Stewart.

The number of Herds under test has risen from 438 in 1912

to 581 in 1913, while the total number of cows tested shows an increase from 18,356 in 1912 to 22,816 in 1913.

The following is a list of the Milk Record Societies in 1913:—

Name.	Secretary.
Annandale . . .	Mr John Henderson, Lockerbie.
Arran . . .	Mr James Bone, jun., Glenkiln, Lamash.
Bute and Lower Renfrew	{ Mr Archibald Blair, 40 Rue End Street, Greenock.
Campbeltown.	
Carrick . . .	Mr J. S. Paterson, Royal Bank, Campbeltown.
Central Ayrshire No. 1	{ Mr John Stevenson, jun., Balig, Ballantrae.
Central Ayrshire No. 2	
Central Ayrshire No. 3	{ Mr James Howie, Hillhouse, Kilmarnock.
Cumnock . . .	
Dumbarton . . .	{ Mr William Taylor, Fortacres, Dundonald.
Dunragit . . .	
Fenwick (High) . . .	{ Mr Allan Stevenson, Parkhill, Mauchline.
Fenwick (Low) . . .	
Fife . . .	Mr Alex. Arthur, Benston, New Cumnock.
Islay . . .	Mr John Bilsland, Quay Place, Dumbarton.
"John Spier" . . .	{ Mr T. Campbell Gilmour, Estate Office, Dunragit.
Kirkintilloch . . .	
Kirkmaiden and Stoneykirk	Mr James Mather, Low Gainford, Fenwick.
Leswalt and Kirkcolm	Mr John Smith, Wyllieland, Fenwick.
Lesmahagow . . .	{ Mr William M'Niven, Royal Bank, Kirkcaldy.
Lower Wigtownshire	
Mauchline . . .	Mr Archibald Campbell, Gruinart, Islay.
Montgomerie . . .	Mr Robert Wilson, Westwood, Dunlop.
Newton Stewart	{ Mr Robert Wilson, Westwood, Dunlop.
Nithsdale . . .	
Ochiltree . . .	{ Mr W. D. M'Creath, Challoch, Newton Stewart.
Stewartry, Nos. 1, 2, 3, and 4	
Strathendric . . .	{ Mr John Henderson, Lockerbie.
Upper Renfrew	
	Mr A. W. Montgomerie, Lessnessock, Ochiltree.
	{ Mr Patrick Gifford, Solicitor, Castle-Douglas.
	{ Mr John Paterson, Woodend, Balforn.
	{ Mr J. Campbell Murray, 216 West George St., Glasgow.

Season 1913.

The following table shows the membership of the Societies, cows tested under them, frequency of testing, and duration of testing period:—

Name of the Society.	No. of Members.	Duration of test, in weeks.	Number tested.	Interval between tests, in days.
1. Annandale	23	52	930	27
2. Arran	19	34	227	21
3. Bute and Lower Renfrew .	18	52	452	21
4. Campbeltown	18	38·5	755	21
5. Carrick	17	52	788	21
6. Central Ayrshire, No. 1 .	18	52	669	21
7. Central Ayrshire, No. 2 .	18	52	594	21
8. Central Ayrshire, No. 3 .	18	52	686	21
9. Cumnock	20	52	592	21
10. Dumbarton	17	52	540	20
11. Dunragit	16	47	1000	21
12. Fenwick (High)	18	52	549	21
13. Fenwick (Low).	19	52	802	21
14. Fife	18	40	572	20
15. Islay	19	41	602	22
16. " John Spier "	26	52	876	28
17. Kirkintilloch	22	48	580	25
18. Kirkmaiden & Stoneykirk .	17	40	1264	28
19. Leswalt and Kirkcolm .	17	52	939	21
20. Lesmahagow	23	52	752	28
21. Lower Wigtownshire . .	18	42	922	23
22. Mauchline	18	52	607	21
23. Montgomerie	25	52	753	28
24. Newton Stewart	7	33	316	14
25. Nithsdale	23	52	991	27
26. Ochiltree	21	52	617	21
27. Stewartry, No. 1	18	51	934	27
28. Stewartry, No. 2	14	50	959	27
29. Stewartry, No. 3	12	50	658	20
30. Stewartry, No. 4	18	50	901	27
31. Strathendric	9	52	253	14
32. Upper Renfrew	17	52	743	20
	581		22,816	

SOCIETIES SANCTIONED BY THE SCOTTISH MILK RECORDS
COMMITTEE IN 1913.

Annandale Milk Record Society.

This society was in its second year, and continued to have the same membership as in 1912—namely, 23. The number of cows under test, however, has risen from 835 in 1912 to 930 in 1913.

Milk is chiefly produced for direct sale, but on some of the farms cheese is made during the summer months.

Testing was continued throughout the whole year at intervals of 27 days.

Of the 930 cows and heifers under test, 270 cows and 150 heifers are classed as good, and 42 cows and 11 heifers as bad.

Arran Milk Record Society.

This new society had a membership of 19, and was confined entirely to the Island of Arran. Some of the herds are very small, but in certain cases two are situated so close together that the tester has been able to test both in one day.

The cows all calve in the spring months, and milk is almost entirely produced for direct sale, although on two of the larger farms cheese is made during summer.

Testing was begun on 8th April, and continued till 18th November, a period of 34 weeks, at intervals of 21 days.

Of the 227 cows and heifers under test, 55 cows and 25 heifers are classed as good. This is not unsatisfactory for a new society, as no cows are classed as bad.

Bute and Lower Ward of Renfrew Milk Record Society.

This society had the same number of members as in 1912, but its composition has been altered owing to three of the members on the Argyleshire coast having been transferred to the new society formed in Dumbartonshire. The number of cows tested was 452, as against 507 in 1912.

Testing was carried on throughout the whole year at intervals of 21 days.

Milk is entirely produced for direct sale, and cows calve at all periods of the year.

Of the 452 cows and heifers under test, 155 cows and 48 heifers are classed as good, and 23 cows and 3 heifers as bad.

Campbeltown Milk Record Society.

This society is also in its second year, and has a membership similar to last year—namely, 18—while the number of cows tested is 755, as against 741 in 1912.

The cows all calve during the spring months, and cheesemaking is general in summer.

Testing began on 5th March, and was continued until 29th November, a period of 38·5 weeks, at intervals of 21 days.

Of the 755 cows and heifers under test, 181 cows and 55 heifers are classed as good, and 21 cows and 6 heifers as bad.

Carrick Milk Record Society.

This society maintained its membership of 1912, while the number of cows under test was 788, as against 806 in 1912.

Testing was carried on continuously throughout the year at intervals of 21 days.

Milk is chiefly produced for direct sale; only on a few of the farms is cheese made in summer.

Of the 788 cows and heifers under test, 247 cows and 81 heifers are classed as good, and 44 cows and 3 heifers as bad.

Central Ayrshire Milk Record Societies.

In order to meet a number of new applications for membership within its area, it was found necessary to rearrange the Central Ayrshire Society of 1912, and three societies were formed—namely, Central Ayrshire Societies, Nos. 1, 2, and 3, with a total membership of 54.

Scheme No. 1 Society is practically confined to the Hurlford, Galston, and Newmilns district of Ayrshire, where milk is chiefly produced for direct sale. It had 18 members in 1913, and tested 669 cows.

Testing was carried on throughout the whole year at intervals of 21 days.

Of the 669 cows and heifers under test, 237 cows and 67 heifers are classed as good, and 29 cows and 4 heifers as bad.

In Scheme No. 2 Society there were 18 members, with 594 cows under test.

This society takes in the districts of Craigie and Dundonald, where the milk is almost entirely produced for direct sale.

As in Scheme No. 1 Society, testing was carried on throughout the whole year at intervals of 21 days.

Of the 594 cows and heifers under test, 182 cows and 57 heifers are classed as good, and 24 cows as bad.

In Scheme No. 3 Society also there were 18 members, with 686 cows under test.

The districts covered by the society are Symington, Monkton, and Tarbolton.

On some of the farms milk is produced for direct sale, while on others cheesemaking is practised during the summer months.

As in Nos. 1 and 2 districts testing was carried on throughout the whole year at intervals of 21 days.

Of the 686 cows and heifers under test, 169 cows and 58 heifers are classed as good, and 55 cows and 8 heifers as bad.

Osmonock Milk Record Society.

This society had a membership of 20 in 1913, as against 19 in 1912, while the number of cows under test was 592, as against 569 in 1912.

Most of the cows calve during the early part of the year, and cheesemaking is general during summer.

Testing was continued throughout the whole year at intervals of 21 days.

Of the 592 cows and heifers under test, 273 cows and 101 heifers are classed as good, and 3 cows and 2 heifers as bad.

Dumbarton Milk Record Society.

This new society had a membership of 20, and the number of cows under test was 540.

Testing was carried on throughout the whole year at intervals of 20 days.

Cows calve at all periods of the year, and milk is entirely produced for direct sale. In a new society such as this, where the cows calve at all periods of the year, a large proportion of the lactations are necessarily incomplete.

Of the 540 cows and heifers under test, 110 cows and 38 heifers are classed as good, and 14 cows as bad.

Dunragit Milk Record Society.

The membership of this society again shows an increase of one on the previous year, while the number of cows tested increased from 940 in 1912 to 1000 in 1913.

Testing was carried on for a period of 47 weeks, from 26th January till 16th November, at intervals of 21 days.

Cheesemaking is general throughout the whole season, and the cows all calve in the spring months.

Of the 1000 cows and heifers under test, 201 cows and 90 heifers are classed as good, and 59 cows and 5 heifers as bad.

High Fenwick Milk Record Society.

The Fenwick district, in which one monthly society was in operation in 1912, has been divided, and two three-weekly societies are now in operation.

The High Fenwick Society had 18 members in 1913, with 549 cows under test.

Milk is entirely produced for direct sale, and cows calve at all periods of the year.

Testing was carried on throughout the whole year at intervals of 21 days.

Of the 549 cows and heifers under test, 291 cows and 80 heifers are classed as good, and 7 cows as bad.

Low Fenwick Milk Record Society.

This society had a membership of 19, while the number of cows tested was 802.

The periods of calving and conditions of disposal of milk are exactly similar to those of the High Fenwick Society. Testing was carried on throughout the whole year at intervals of 21 days.

Of the 802 cows and heifers under test, 213 cows and 127 heifers are classed as good, and 14 cows and 3 heifers as bad.

Fife Milk Record Society.

This new society has been formed with a membership of 18, and marks the introduction of milk-recording into Fifeshire, and indeed into the East of Scotland.

As the cows calve at all periods of the year, some of the lactations are in this first year necessarily incomplete.

Milk is entirely produced for direct sale.

Testing was begun on 12th March and continued until the end of the year, a period of 40 weeks, at intervals of 20 days.

Of the 572 cows and heifers under test, 106 cows and 19 heifers are classed as good, and 15 cows as bad.

Islay Milk Record Society.

This society was in its second year, and had 20 members—an increase of 1 over the number in 1912; but the number of cows under test was slightly reduced—namely, 602, as against 619 in 1912.

Testing was begun on 4th March, and continued till 16th December (a period of 41 weeks) at intervals of 21 days.

The cows all calve in the spring months, and cheese is made throughout the whole milking season, there being no outlet for the direct sale of milk.

Of the 602 cows and heifers under test, 21 cows and 8 heifers are classed as good, and 164 cows and 42 heifers as bad.

"John Spier" Milk Record Society.

This society maintained in 1913 its membership of 1912, while the number of cows tested was 876, as against 927 in 1912.

Cows calve at all periods of the year on the farms included in the society's operations, and milk is entirely produced for direct sale.

Testing was carried on throughout the whole year at intervals of 28 days.

Of the 876 cows and heifers under test, 249 cows and 119 heifers are classed as good, and 38 cows and 11 heifers as bad.

Kirkintilloch and District Milk Record Society.

This new society has been formed (as the name denotes) to operate chiefly in the Kirkintilloch district, and has a membership of 22.

In this society also the cows calve at all periods throughout the year, so that many of the records are incomplete. Milk is entirely produced for direct sale.

Testing was commenced on 27th January, and continued till the end of the year (a period of 48 weeks) at intervals of 25 days.

Of the 580 cows and heifers under test, 42 cows and 12 heifers are classed as good, and 55 cows and 1 heifer as bad.

Kirkmaiden and Stoneykirk Milk Record Society.

This society was in its second year, and had an increase of 1 in its membership over that of 1912, while the number of cows tested increased from 1234 in 1912 to 1264 in 1913.

The herds in this district are exceptionally large, the 17 herds having an average of about 75 cows each.

Testing was begun on 10th February, and continued until 7th November (a period of 40 weeks) at intervals of 28 days.

The district is entirely a cheesemaking one, and cows calve during the early months of the year.

Of the 1264 cows and heifers under test, 140 cows and 67 heifers are classed as good, and 68 cows and 1 heifer as bad.

Leswalt and Kirkcolm Milk Record Society.

This society had the same membership as in the previous year, while the number of cows under test was 939, as against 896 in 1912.

Testing was carried on practically throughout the whole year at intervals of 21 days.

As in the case of the other Wigtownshire societies, cheese-making is largely carried on by the members, and cows calve in the early spring months.

Of the 939 cows and heifers under test, 338 cows and 74 heifers are classed as good, and 40 cows and 4 heifers as bad.

Lesmahagow Milk Record Society.

This society had 23 members, as against 24 in 1912, but the number of cows tested was increased from 650 in 1912 to 752 in 1913.

Testing was carried on as formerly throughout the whole year at intervals of 28 days.

The cows calve at all seasons of the year, and milk is mostly produced for direct sale.

Of the 752 cows and heifers under test, 284 cows and 150 heifers are classed as good, and 17 cows and 2 heifers as bad.

Lower Wigtownshire Milk Record Society.

This society had an increase of 1 on its membership of 1912, while the number of cows under test was 922, as against 892 in 1912.

Testing was begun on 11th February, and continued till 2nd December (a period of 42 weeks) at intervals of 23 days.

Most of the cows calve in the spring months, and cheese-making is largely practised.

Of the 922 cows and heifers under test, 303 cows and 76 heifers are classed as good, and 24 cows and 4 heifers as bad.

Mauchline Milk Record Society.

This society continued to maintain its membership, and tested 607 cows in 1913, as against 629 in 1912.

Tests were taken at intervals of 21 days throughout the whole year.

Cheese is made on most of the farms; and with few exceptions the cows calve during the spring months.

Of the 607 cows and heifers under test, 324 cows and 89 heifers are classed as good, and 2 cows and 4 heifers as bad.

Montgomerie Milk Record Society.

This Ayrshire society had 25 members in 1913, as against 26 in 1912, while the number of cows under test was 753, as against 814 in 1912.

Testing was continued throughout the whole year at intervals of 28 days.

In this district milk is almost entirely produced for direct sale, and the cows calve at all seasons of the year.

Of the 753 cows and heifers under test, 403 cows and 79 heifers are classed as good, and 7 cows and 1 heifer as bad.

Newton Stewart Milk Record Society.

This new society has been formed, as the name implies, in the Newton Stewart district of Wigtownshire. It had in 1913 a membership of 7, and tested 316 cows. The fact of its not being formed until about the end of March prevented it from obtaining a larger membership.

Testing was carried on from 25th March till 10th November (a period of 33 weeks) at intervals of 14 days.

The district is entirely a cheesemaking one; and most of the cows calve in spring.

Of the 316 cows and heifers under test, 20 cows and 9 heifers are classed as good, and 14 cows and 3 heifers as bad.

Nithsdale Milk Record Society.

This society maintained in 1913 its membership of 1912, while the number of cows tested was 991, as against 1029 in 1912.

Except on a few of the farms, cheese is made during summer; and most of the cows calve in the early months of the year.

Testing was carried on throughout the whole year at intervals of 27 days.

Of the 991 cows and heifers under test, 400 cows and 88 heifers are classed as good, and 39 cows as bad.

Ochiltree Milk Record Society.

This society had 21 members, as against 18 in 1912; and the number of cows tested was increased from 486 in 1912 to 617 in 1913.

The larger proportion of the cows calve during the spring months; and in summer some cheese is made.

Testing was carried on throughout the whole year at intervals of 21 days.

Of the 617 cows and heifers under test, 311 cows and 120 heifers are classed as good, and 8 cows and 2 heifers as bad.

Stewartry Milk Record Societies.

Milk recording in the Stewartry continues to make steady progress. The scheme was carried on in 1913, as in 1912, under four separate sections, but the number of members increased from 57 in 1912 to 61 in 1913, while the number of cows tested was 3445 in 1913, as against 3255 in 1912.

Most of the cows calve during the spring months; and cheesemaking is largely practised.

In *Scheme No. 1 Society* there were 18 members, and 934 cows were under test.

Testing was begun on 9th January, and continued till the end of the year (a period of 51 weeks) at intervals of 27 days.

Of the 934 cows and heifers under test, 133 cows and 110 heifers are classed as good, and 104 cows and 10 heifers as bad.

In *Scheme No. 2 Society* there were 14 members, with 959 cows under test.

Testing was continued for a period of 50 weeks, beginning on 13th January, and ending 31st December, at intervals of 27 days.

Of the 959 cows and heifers under test, 287 cows and 67 heifers are classed as good, and 63 cows and 1 heifer as bad.

In *Scheme No. 3 Society* there were 12 members, with 658 cows under test.

Testing was begun on 6th January, and continued till 23rd December (a period of 50 weeks) at intervals of 20 days.

Of the 658 cows and heifers under test, 156 cows and 69 heifers are classed as good, and 64 cows and 16 heifers as bad.

Scheme No. 4 Society had 18 members, with 894 cows under test.

Testing was carried on for a period of 50 weeks, from 14th January till 31st December, at intervals of 27 days.

Of the 901 cows and heifers under test, 208 cows and 80 heifers are classed as good, and 74 cows and 7 heifers as bad.

Strathendric Milk Record Society.

This Stirlingshire society continued during 1913 with the same membership as it had in 1912, while the number of cows tested was 253, as against 211 in 1912.

The cows calve at various seasons of the year, and milk is produced for direct sale.

Testing was continued throughout the whole year at intervals of 14 days.

Of the 253 cows and heifers under test, 97 cows and 36 heifers are classed as good, and 3 cows and 2 heifers as bad.

Upper Ward of Renfrewshire Milk Record Society.

This society maintained its membership, and tested 743 cows, as against 719 in 1912.

The cows calve at all periods throughout the year, and milk is entirely produced for direct sale.

Testing was continued throughout the whole year at intervals of 20 days.

Of the 743 cows and heifers under test, 223 cows and 105 heifers are classed as good, and 3 cows as bad.

Progress in the development of the practice of milk-recording is thus quite continuous; and during the year under review it has been as rapid as the funds at the Committee's disposal have allowed it to be.

The results of the year's work show that the general economic result originally aimed at is to a very large extent in course of realisation. Of the 22,816 cows reported on, 8983, or almost 40 per cent of the whole, are now in the class defined as good, and may be recognised as well above the profitable level of production, while only 1293, or about 5.6 per cent, are classed as bad, and clearly unprofitable. The unclassified cows, numbering 12,862, may probably be regarded as divisible, in rough proportion to these figures, between the profitable and unprofitable classes; and although this is a matter rather of conjecture than of precisely ascertained fact, it may reasonably be inferred that a line drawn at a 600-gallon yield, which is very generally regarded as the amount required for barely profitable dairying, would have approximately seven cows above it for every one below it.

It is interesting to note that the five societies, which are strictly new (in the sense that their members are all taking records for the first time), show only four cows in the "good" class for every one in the "bad" class, while five societies established for several years have only one animal in the "bad" for every thirty-three in the "good" class—being only one "bad" yielder out of every fifty-seven cows tested.

The fact that one society, which has now been two years in existence, shows no fewer than 206 "bad" animals against only 29 classed as "good," indicates the extent of the advance which ought to be made in some districts, and of the benefit which systematic selection and improvement of stock might confer on farmers in such districts.

Negotiations have been in progress during the year 1913 for

obtaining, for the promotion of milk-recording, a grant from the Development Fund, considerably larger than the sum so far available for this purpose. These negotiations were not finally complete at the end of the year, and it would be premature to indicate their result. But it may be permissible to hope that they will lead, in the near future, to far-reaching developments of the Committee's work.

ANALYSES FOR MEMBERS DURING 1913.

By DR J. F. TOCHER, Aberdeen, Analyst to the Society.

THE number of samples submitted for analysis since I assumed office on 8th January up to 31st December was 117. The following table shows the number and nature of the samples analysed during the last six years:—

	1913.	1912.	1911.	1910.	1909.	1908.
Fertilisers	46	58	68	61	97	68
Feeding-stuffs . . .	25	28	23	30	26	28
Waters	27	15	17	26	16	29
Miscellaneous . . .	19	21	18	29	20	10
Total	117	122	136	146	159	135

This corresponds to an average of 136 samples annually during the past six years. The number of fertilisers examined during the past two years has been somewhat less than the numbers examined during former years.

FERTILISERS.

South African Guano.—Among the fertilisers examined by me during the present year were two samples of South African guano, which showed, on analysis, considerable manurial value. Both were undried crude samples, and the better of the two, when rendered moisture free, was found to have the following composition:—

	Per cent.
Insoluble phosphate (as tricalcium phosphate) . .	12.27
Nitrogen	4.25
Potash (as K ₂ O)	2.22

Nitrolim Mixture.—A sample of a mixed manure containing nitrolim (nitrogenous guano) and sulphate of potash was sent in for analysis by a member, who stated that ammonia was being liberated pretty freely from the mixture. The amount of nitrogen found present was 6.69 per cent, while the amount of nitrogen in the nitrolim added was equal theoretically to

5 per cent. The original amount of nitrogen in the guano was not stated. In this case the loss in nitrogen arose through a reaction between the ammonium salts in the guano and the caustic lime present in the nitrolim. Nitrolim contains on an average about 57 per cent of calcium cyanamide, 21 per cent of calcium oxide, and 22 per cent of carbon, iron, and silica. It will thus be seen that nitrolim is strongly alkaline, and would act quickly upon any ammonium salts, with the result that much of the fertilising constituents of the mixture would be lost. It is well to warn members against the indiscriminate mixing of rich manures, particularly those containing ammoniacal salts.

Ground Lime.—Members have sometimes to decide for themselves as to which is the best agricultural ground lime, at the price, of a series of samples, the composition of which is known and stated. A member had recently four samples to select from, the cost of these being respectively 20s., 26s. 4d., 19s. 10d., and 22s. 6d. per ton. The percentages of lime (expressed as CaO) were 52·76, 87·52, 48·71, and 52 respectively. The best lime was obviously sample No. 2, the price working out at 3·6 pence per unit; the others costing 4·5, 4·9, and 5·2 pence respectively. A sample of waste lime was examined, which contained 59 per cent caustic lime and 91·5 per cent of lime expressed as carbonate.

Potato Manures.—Quite a number of samples of potato manure were submitted for analysis. The composition of these was very variable. The proportion of insoluble phosphate ranged from 2·39 to 10·68 per cent, and the proportion of soluble phosphate from 7·5 to 18·7 per cent. The amount of nitrogen varied from 2·94 to 9·26 per cent, while the potash was found to range from 2·21 to 7·97 per cent. Judging from the samples submitted, the typical potato manure for this season was represented by one containing 5·93 per cent insoluble phosphate; 14·52 per cent soluble phosphate; 5·59 per cent nitrogen, and 4·75 per cent of potash. The following table shows the composition of twelve of these manures:—

No.	Insoluble Phosphate.	Soluble Phosphate.	Nitrogen.	Potash.
1 . .	2·92	13·72	8·35	6·42
2 . .	10·68	7·50	9·26	4·91
3 . .	3·79	15·09	7·70	3·40
4 . .	7·02	14·87	3·28	4·20
5 . .	7·08	18·68	2·94	3·81
6 . .	6·37	15·00	5·92	2·21
7 . .	6·35	17·36	3·05	3·65
8 . .	5·25	12·15	5·00	5·56
9 . .	10·29	13·98	4·45	4·20
10 . .	5·77	14·34	4·53	4·29
11 . .	2·39	18·73	3·89	7·97
12 . .	3·20	12·83	8·80	6·43

General.—A number of mixed manures and unspecified fertilisers were examined, one of which contained 25 per cent of sulphate of ammonia, while another contained 3·5 per cent of nitrogen and 40·5 per cent of total phosphate; this last figure being 5 per cent above the guarantee given. A sample of nitrate of soda was examined, and was found to contain 14·8 per cent of nitrogen, or 0·7 per cent below the usual guarantee.

FEEDING-STUFFS.

Linseed-cake.—A sample of linseed-cake was sent by a member for analysis, in order to ascertain whether any poisonous substance or substances dangerous to cattle were present. As a minute proportion of a substance capable of producing hydrocyanic acid is sometimes found to be present in linseed, a very careful examination was made of the cake in order to detect the presence of this poison, with negative results. No other dangerous or poisonous substances were found to be present. The cake was of good quality. Another sample of linseed-cake was examined, with the result that it was found to contain 3·23 per cent of sand. This is an abnormal proportion. The average proportion of sand in an ordinary linseed-cake never exceeds 1 per cent. Among the linseed-cakes examined was a further sample, which, when analysed, gave 11 per cent of oil and 25·7 per cent of albuminoids. The proportion of fibre was a little higher than the average, but the excess was not sufficient to account for the low proportion of albuminoids. The feeding-stuff was a perfectly genuine, pure linseed-cake, and the exceptional figures were due to seasonal variations and not to any sophistication.

Druff.—Three samples of feeding-stuffs were sent by a member for the purpose of ascertaining whether the composition of these feeding-stuffs agreed with their descriptive titles, and whether any foreign ingredients likely to be injurious to stock were present. The first was a sample of dairy meal; the second a sample of bean meal; and the third a sample of druff. The dairy mixture was a mixture of bran, locust, and undecorticated cotton-cake, containing 6·88 per cent of oil and 20·81 per cent of albuminoids. No dangerous or poisonous foreign ingredients were found to be present in either of these samples. The bean meal gave on analysis 1·7 per cent of oil and 23·25 per cent of albuminoids. The druff contained 4 per cent of oil and 10 per cent of albuminoids. It had, however, a bad colour, which, on a bacteriological examination, proved to be due to the presence of excessive numbers of organisms associated with putrefaction. Their presence in such numbers was sufficient to account for the illness among the cattle being fed with druff, and shows the necessity for great care being

exercised during feeding to ascertain the condition of such feeding-stuffs as are liable to decomposition from carelessness or other causes.

Peas.—Three samples of peas were analysed in the early spring. The first two were samples of gram peas containing over 5 per cent of oil and over 18 per cent of albuminoids. The third was a sample of mutter peas containing 1·76 per cent of oil and 24·09 per cent of albuminoids. All three were, therefore, good normal samples. It is well, however, to remind members that under certain conditions the mutter variety of peas exhibits poisonous properties. The active principle appears to be dissipated by means of heat, and it is held that after such treatment the peas may be taken safely for food. Quite recently an action was taken against a firm of corn merchants in Hull to recover £100 damages for the death of three foals and deterioration of live stock, alleged to be due to the presence of a poisonous substance, or poisonous substances, in mutter peas. Lengthy evidence was given on both sides, and the defence was that death was more likely to have occurred from over-feeding of the animals. The jury disagreed, and the case against the defendants failed. In view of the fact that on several occasions suspicion has been raised against mutter peas as being quite safe for feeding purposes, an investigation has been undertaken in order to ascertain the definite constitution of these peas, and what variation occurs in the proportion of active or poisonous principles, if any, found to be present.

Treacle.—A sample of treacle was examined for the purpose of ascertaining whether it could be used with safety as a feeding-stuff. This sample was from a stock which had got inadvertently mixed with some petroleum in a cargo. It was found to contain 36·3 per cent of petroleum and other unsaponifiable matter, and its use was not recommended.

Beans.—A sample of Königsberg beans was sent in for analysis. The member wished to know whether they contained any substance or substances which would be injurious to animals. The beans consisted almost entirely of varieties of *Phaseolus vulgaris*. No beans of the plant *Phaseolus lunatus* (the Duffin bean) were detected in the lot sent. The sample was quite free from poisonous substances, and contained the following proportions of the varieties named:—

	Per cent.
Small white	34·30
Speckled	21·83
Large white	9·26
Yellow	12·73
Broken, decomposed, and mouldy beans	21·88
	100·00

MISCELLANEOUS SAMPLES.

Waters.—Among the 27 samples of water examined was a sample which contained a very low proportion of dissolved solid matter, and which gave a slightly acid reaction on being tested in the usual way. It is well known that certain very pure waters and certain peaty waters have a distinctly perceptible solvent action upon metallic lead. This particular water was found to contain a distinct trace of lead, and was therefore quite dangerous to health if used for domestic purposes. Such a water requires to be specially treated before it can be safely conveyed in lead pipes. This is not a difficult matter, and there are well-known processes in vogue for rendering such waters safe for domestic purposes.

Not infrequently one finds there is difficulty in getting anywhere near at hand a clean and drinkable water supply for a farm. Quite recently a water was examined for a member who was in this difficulty. In such cases a process of purification of the local supply becomes necessary, and members have to decide which method of purification they will adopt. In particular cases different methods of purification may have to be used, but, in general, water can be purified by collecting in a small reservoir, and subsequently passing the water over suitable sand filter beds, after rest for sedimentation purposes in the collecting reservoir. Waters when properly treated in this way are both chemically and bacteriologically of good quality. Treatment of the water by coke or charcoal at the farm where the water is neither collected nor settled, but is simply run over the purifying agent, ought to be avoided. Such treatment is a real danger, as the water, instead of being improved, is frequently rendered of worse quality, due to the collection and sudden release of objectionable and filthy matter.

Milks.—Several of the milks examined were found to be below the standard of 3 per cent of butter-fat prescribed by the Board of Agriculture. It is well known that the proportion of butter-fat in milk varies from cow to cow and from season to season, but the proportion of cases in which butter-fat falls below 3 per cent is very small. This problem of natural variation is of great interest and importance to farmers, and every assistance should be given to efforts to get proper data as to quality and yield of milk collected from all parts of the country. Another case may be cited to show the necessity of having reliable and abundant data. A sample of milk was sent to me by a farmer who had a large herd of cows, and who noticed that a particular cow seemed to yield milk very rich in cream. An

analysis of the sample of milk sent by this member showed that the proportion of butter-fat was fairly high, while the proportion of solids, not fat, was rather low. This is only another instance of cases where the proportion of solids, not fat, occasionally is found to be below the limit of 8·5 per cent—the limit prescribed by the Board of Agriculture. Farmers want to know, for several reasons, what are the actual milking capacities of various breeds of cows, and what weight ought to be given to the various factors influencing the production of milk, and the variations which take place in its chemical constitution.

Soils.—Among the soils analysed was a sample which contained less than '002 per cent of available phosphates. Soils containing less than '01 per cent are reckoned extremely poor in phosphates, and while the process of weathering may help the soil from time to time, such a soil stands in immediate need of a phosphatic fertiliser, and should be suitably treated as early as possible.

Horse Condiment.—A sample of condiment was examined, which gave the following analysis:—

	Per cent.
Oil	1·33
Albuminoids	19·00
Soluble carbohydrates	54·82
Fibre	3·15
Ash	6·96
Moisture	14·74
	<hr/>
	100·000

The mixture consisted of linseed, anise, starch, and turmeric.

Rat Poison.—A rat poison was examined and was found to contain 1·18 per cent of phosphorus mixed with bran and fat.

Cure for Braxy.—A sample of a "cure" for braxy, wire-worm, and scour was examined, and was found to contain about 10 per cent copper sulphate and 3 per cent iron sulphate. Other substances were present in small proportion, and the whole was made up with salt.

Arsenical Poisoning.—Among the miscellaneous samples examined was the stomach of a stirk, which was found to contain arsenic in more than sufficient quantity to cause death.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1913, AND THE WEATHER OF SCOTLAND IN 1913.

THE CROPS.

THE following comparison of the cereal and other crops of 1913 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow-hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braid? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?
11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled:—

MID-LOTHIAN. *Wheat*—48 bushels; fully more than last year; 3½ bushels seed sown. *Barley*—50 bushels; straw an average crop; 3 bushels seed sown. *Oats*—48 bushels; straw lighter crop than last year. *Harvest* began rather earlier than last year; got broken weather to finish. *Hay*—About the same as last year—2 tons 10 cwt. or so; first crop well got; second very light; not well got—not the half of last year. *Meadow-hay*—Very little, if any, grown. *Potatoes*—Fine crop; superior to last year; late varieties 8 tons; earlies were a light crop; price for late varieties 20s. per ton less than last year. *Turnips*—Small crop compared with last year. *Mangold*—A fine crop, and 10 tons per acre better than last year. No damage by insects or by weeds. *Live Stock*—Fine pasture; stock thrive well; fine weather. Cattle and sheep quite free from disease. *Clip of wool*—About the average.

LINLITHGOWSHIRE. *Wheat*—Quality better than last year; quantity—grain, about 6 qrs.; straw, 1½ ton; 4 to 5 bushels sown. *Barley*—Quantity, 7 qrs.; quality good; 1½ ton straw; 4 to 5 bushels sown. *Oats*—Quantity, 6 qrs.; quality good; straw, 2 tons; 4 to 6 bushels. *Harvest* began about the usual time. *Hay*—2½ tons per acre; a big crop; quality good. *Potatoes*—Large yield compared with last year; 8 to 10 tons; no disease. *Turnips*—Heavy crop, and quality good; 25 tons per acre; no second sowing. No damage by insects or weeds. *Pastures*—Average growth; quality good. *Live Stock* thrive well; cattle and sheep free from disease. *Clip of wool*—Good average clip.

HADDINGTONSHIRE (Upper District). *Wheat*—44 bushels per acre, and the quality was much above an average; the straw was of the finest, on account of favourable season for this crop. Seed, autumn-sown, 4 bushels per acre. *Barley*—48 to 50 bushels was about the average crop, and the quality of grain has seldom been equalled in the memory of the present generation of farmers—where the crop was harvested early; the later harvested was slightly discoloured by bad weather. Straw, like the grain, was above an average; seed, 3 bushels per acre, drilled, is the generally recognised quantity. *Oats*—48 bushels, and much below an average; grain small, and not fully developed on account of the dry summer; straw short, and much below an average in weight; 4 bushels usual seeding for potato oats, and 5 bushels for the new hybrid varieties. *Harvest* about the usual time. *Hay*—Quantity, 2 tons 5 cwt. per acre; and an average, and quality of the finest. *Meadow-hay*—None grown in this district. *Potatoes*—The potato crop was much below last year, and quantity about 7 tons on an average; no disease, and nothing new in the varieties. *Turnips*—Crop much below preceding year, and 15 tons an average; many of the fields were affected with mildew, which interfered with the growth. Crop braided all right, and no resowing. No injury by insects. *Weeds*—Some oat crops suffered by charlock, which considerably damaged the crop. Spraying with sulphate of copper is reducing the damage done by this weed. *Pastures* suffered by the dry, warm weather on the lighter soils. *Live Stock* thrive well, and were placed on the market in good condition. Cattle and sheep free from disease. *Clip of wool*—A full average.

HADDINGTONSHIRE (Lower District). *Wheat*—40 to 48 bushels; quality of grain good; straw good bulk; seed sown, 3 bushels drilled, 3 to 4 bushels broadcast. *Barley*—48 to 56 bushels; quality extra good where

secured before weather broke ; considerable quantity damaged by heating in stacks ; fair quantity straw ; seed sown, 3 bushels drilled. *Oats*—A light crop, 40 to 48 bushels ; quality good except where heated in stack ; seed sown, $3\frac{1}{2}$ to $4\frac{1}{2}$ bushels, according to variety, drilled ; broadcast, 1 bushel more. *Harvest* commenced at usual time, about 12th August. *Hay*—First-rate crop, secured in grand condition ; 2 to 3 tons. *Potatoes*—A light crop, owing to drought ; no disease ; Up-to-Date varieties 5 to 8 tons ; Langworthy and Golden Wonders 5 to 7 tons ; Arran Chief, a popular new variety. *Turnips*—A small crop, owing to drought ; the braird was irregular, and delayed owing to insufficient moisture, and the crop on the whole is 20 per cent under average. No injury by insects or by weeds. *Pastures* were bare during summer, owing to drought, but grass very plentiful in the autumn and back end. *Live Stock* thrived well. Cattle and sheep were free from disease. *Clip of wool*—A good and full average clip.

BERWICKSHIRE (Merse). *Wheat*—44 bushels ; grain and straw only fair quality ; some heated and otherwise damaged grain ; 4 bushels sown. *Barley*—40 bushels ; quality of the earliest crops very good ; later crops (more than half the whole crop) considerably damaged in harvesting ; straw about average ; 3 bushels to $3\frac{1}{2}$ bushels sown. *Oats*—36 bushels ; well-filled grain, but straw short ; about $\frac{2}{3}$ of the whole crop more or less damaged in harvesting ; seeding 4 to $4\frac{1}{2}$ bushels. *Harvest* about usual time—10 days earlier than 1912 ; harvest lasted 6 to 9 weeks. *Hay*—Both ryegrass and clover unusually abundant ; generally over 2 tons per acre—say 39 to 41 cwt. ; quality excellent. *Meadow-hay*—Excellent crop—equal to the best of last year ; 35 cwt. ; finest quality. *Potatoes*—About 7 tons per acre, or 2 tons better than 1912 ; very little disease ; Up-to-Date, Dalhousies, King Edwards, and other common varieties mostly planted. *Turnips*—Turnip crop is about 2 tons per acre less than 1912 ; average about 20 tons for swedes and the same for yellows ; the shaw was most luxuriant during autumn and early winter, making the estimation of the crop of roots rather difficult. *Insects*—There was not much, if any, damage by insects. *Weeds* were easily killed during dry July and August. *Pastures*—Most luxuriant in the early part of the season, but suffered from drought in August, while later all pastures were very green and fresh. *Live Stock*—Both cattle and sheep did very well all season, and were free from disease. *Clip of wool*—Average quality and weight.

BERWICKSHIRE (Lammermoor). *Wheat*—Almost none grown. *Barley*—38 bushels—being only grown on the better class of soils and most favourable situations ; Lammermoor barley is generally about as good quality as that grown in the Merse ; this year, being later, it was more damaged. *Oats*—35 bushels ; straw short ; grain would have been prime quality but for the difficult harvesting conditions ; 4 to 5 bushels sown. *Harvest* about a week earlier than 1912 ; harvest lasted about 7 weeks on an average. *Hay*—Good growth, and finest quality ; never got a shower between cutting and stacking ; 35 to 40 cwt. *Meadow-hay*—Very bulky crop, say 36 cwt., and harvested under the best possible conditions ; quality very superior. *Potatoes*—About 6 tons ; tubers of good size, and about a ton better than 1912 crop ; no disease ; few new varieties in use. *Turnips*—Crop began well, but suffered from drought in July and August ; the growth in September and October was very great, and with an open winter the crop has exceeded expectations, and is about an average of 18 tons. No injury by insects. *Weeds*—Charlock the prevailing weed—the dry weather of July and August allowed of effec-

tive cleaning operations. *Pastures*—Growth of pasture was very luxuriant most of the season; barest in August, but very good all autumn. *Live Stock*—A specially good grazing season for all classes of stock. Cattle and sheep were free from disease. *Clip of wool*—Average quality and weight.

ROXBURGHSHIRE. *Wheat*—Very little grown. *Barley*—34 bushels; the grain and straw were of excellent quality, much above an average; 2 to 3 bushels sown for seed. *Oats*—36 bushels; the grain and straw of good quality; from 4 to 6 bushels per acre sown. *Harvest* began at usual date. *Hay*—A heavy crop; from 2 to 3 tons per acre. *Meadow-hay*—More productive. *Potatoes*—7 tons might be an average; very little disease; no new varieties sown to any extent. *Turnips*—Perhaps 15 tons per acre might be an average; quality good; braided well, and very little resowing required. Crops not injured to any extent by insects. Injury by weeds much as usual. *Pastures* very abundant, but too quickly grown to be of very good quality. *Live Stock* did well where the dry weather did not affect the pasture. Cattle and sheep have suffered from usual diseases. *Clip of wool*—Good clip, fairly heavy; a good average.

SELKIRKSHIRE. *Wheat*—Very little grown; much as last year. *Barley*—Good quality where not hurried in to stack; 36 bushels; seeding, 3½ bushels. *Oats*—Both straw and grain fine quality; 30 bushels; seeding, 5 bushels. *Harvest* began a week later than usual; oats were a poor crop, but all got in good order. *Hay*—About 30 cwt. per acre; not the same quality as last year, but secured in good condition. *Meadow-hay*—A fine crop, and perfectly secured; 6 cwt. per acre more than last year. *Potatoes*—A full crop, and little disease. *Turnips* as a whole have turned out well, and are an average crop; little disease; they benefited greatly from the fine autumn. No damage from insects or weeds. *Pastures*—The dry weather in summer injured pastures very much, but never had so much autumn grass, and sheep stocks are looking well everywhere. *Live Stock*—Very few losses among stock this season. Cattle and sheep were quite free from disease. *Clip of wool*—A full average crop of good quality.

PEEBLES SHIRE. *Wheat*—None grown. *Barley*—4 quarters per acre; good quality; 4 bushels per acre sown; straw about 30 cwt. per acre; a similar crop to last year. *Oats*—4½ quarters per acre; very good quality, and about 6 lb. per bushel heavier than last year; straw, 25 cwt. per acre—5 cwt. less than last year; 5 to 5½ bushels sown. *Harvest* began one week earlier than last year—about usual time. *Hay*—2 tons per acre, or from 10 to 15 cwt. less than last year; quality good. *Meadow-hay*—3 tons per acre; much the same as last year; quality extra good. *Potatoes*—From 7 to 8 tons per acre, but small in size; free from disease; no new sorts grown; about same weight of crop as last year. *Turnips*—On good soil, 10 to 15 tons; a very fine crop; heavier than last year, but on thin gravelly soil turnips were not so good—small in size. No damage by insects or weeds. *Pastures*—Full average; growth better than last year, especially in the early and late parts of the season; slightly droughted about midsummer. *Live Stock* thrived well. Cattle and sheep were free from disease. *Clip of wool*—Extra good quality, and slightly heavier than the average.

DUMFRIES SHIRE (Annandale). *Wheat*—None grown in this district. *Barley*—Straw rather below an average, owing to dry summer. Grain

an excellent yield and of fine quality ; nearly all fit for malting purposes. 38 bushels per acre ; seed sown, $3\frac{1}{2}$ to 4 bushels. *Oats*—A wet seed time was very much against this crop. Rain fell almost incessantly from 24th April to 15th May. The seed had to be sown when the land was not in a fit state. Dry weather set in afterwards, and heavy land harrowed wet got very hard. The result was a short crop of straw. Average about 18 cwt. per acre, but all was harvested in first-class order. Grain was of good quality. From 34 to 37 bushels per acre ; seed, 5 to 6 bushels, sown broadcast ; $4\frac{1}{2}$ bushels drilled. *Harvest* began about the 25th August. The last week in this month is about the usual time for this district. Last year harvest began a fortnight earlier. *Ryegrass-hay*, 28 cwt. per acre ; rather over last year's average. Quality excellent, owing to entire absence of rain during hay harvest. *Clover* not so good as last year. *Meadow-hay* below an average, though over last year ; quality very good. *Potatoes* did not seem to suffer from the dry weather, and with plenty of sunshine the crop ripened early. Tubers, large sized, and quality good. Some disease showed itself amongst the Standard varieties. After storing, it was also found that the larger-sized potatoes were not keeping well. Some new varieties were grown, and from these it is said heavy crops were got, up to, and in some cases exceeding, 15 tons per acre. Amongst these varieties were Summit, Arran Chief, and Laing's Imperial. *Turnips* were an average crop. At one time during the summer the crop was expected to be almost a failure, but fine, mild and moist weather during the latter part of September and during October and November saved the situation, and farmers had no reason to complain when storing began. Average weight of crop from 18 to 20 tons. Owing to the damp weather experienced during May the crop braided well, and in no case was a second sowing necessary. *Insects*—No injury to crops by insects, but sparrows did serious damage to the ripening grain. The number of sparrows is now immense, probably greater than ever before, and they take an enormous toll from farmers during the year. Owing to wet seed time charlock was more in evidence than usual, but the summer being dry other weeds were easily kept under. *Pastures*, compared with last year, were better both in growth and quality. The wet spring gave vegetation a good start, and afterwards, although the weather was dry, grass did not suffer to any great extent. *Live Stock*—Pastures gave a full bite all summer, and cattle came off in good condition. The chief drawback was the scarcity of water. Hoose was prevalent amongst cattle rising two years, but otherwise the season was a healthy one. In this district there is usually a heavy death rate from braxy amongst hoggets folded on turnips, but this year feeders have been very fortunate. The death-rate has been the lowest for many years. *Clip of wool* of good quality, but quantity variable. Park sheep gave a good average clip, but hill sheep would be slightly under the average.

Note.—The year will probably rank as perhaps the best year farmers have had since the "seventies." Wool has seldom been higher in price, with mutton at 10d. per lb. for a time ; the best stood at 11d. Beef, however, has not been so high. The great drawback, from the cattle-feeder's point of view, has been the very high price of feeding-stuffs, and the small margin left between the price of store cattle and the price of the same beasts when ready for the butcher.

DUMFRIESSHIRE (Nithsdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—5 bushels more grain ; 2 cwt. less straw than last year. *Harvest*—Where the land was sharp and dry it commenced a fortnight earlier, but the greater part was about the same time as usual. *Hay*—2 tons—5 cwt. more than last year, with quality as good. *Meadow-hay*—

About double this year what it was the year before, and very much superior quality. *Potatoes*—About two tons less than last year; no disease; no new varieties of any moment planted. *Turnips*—5 tons less than last year, but good quality; braided regularly; no second sowing needed. No injury by insects or weeds. *Pastures* were more than average growth. *Live Stock* thrived exceedingly well. Cattle and sheep were free from disease. *Clip of wool*—Quite an average.

DUMFRIESSHIRE (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Straw short on most places, but very good quality; yield, about 33 bushels; seed sown, 5 to 6 bushels. *Harvest* about a week earlier than usual time, and a very good harvest, only a lot of oats carted too soon and heated badly in stack. *Hay*—Very good crops—about 35 cwt., and very good quality, as most was secured without a drop of rain. *Meadow-hay*—Lighter than last year, but cut much earlier, and all secured in excellent condition. *Potatoes*—Heavier than last year; about 6 tons 10 cwt.; very little disease except in gardens in towns. No new varieties planted. *Turnips*—Very good, about 20 tons, except that in some places they were badly burned up in summer, and consequently were a lighter crop; braided very well, and hardly any had to be sown twice. No injury by insects. No weeds, as it was splendid weather for killing everything pushed out when thinning turnips. *Pastures*—Badly burned up in some places, and not an average growth. *Live Stock* did fairly well, but were much upset by flies, &c.; cattle free from disease, but in some places hoggs have been very bad with braxy, and some heavy losses reported where hoggs have not been drenched. *Clip of wool*—Rather above the average.

KIRKCUDBRIGHTSHIRE. *Wheat*—45 bushels; quality, excellent; $3\frac{1}{2}$ to 4 bushels sown; weight of straw, 2 tons per acre. *Barley*—None grown. *Oats*—42 bushels; well harvested; good grain; 5 bushels per acre seed sown; 30 cwt. per acre straw. *Harvest* began about usual time—at end of August. *Hay*—Greatly in excess of last year, and much above average yield; 2 tons per acre. *Meadow-hay*—Much in excess of last year, and got in splendid order. *Potatoes*—Early crop, light, and 35 per cent under last year; about 6 tons per acre. Late crop good—equal to last year; yield, 8 to 9 tons per acre; slight disease. *Turnips*—A good crop, though considerably under last year; 18 tons per acre; braided well; no re-sowing. *Insects*—Small damage by insects. *Weeds*—Chickweed and spurry came up amongst corn crops during the cold weather in May and early June, and the ordinary “yellow” was common. *Pastures*—Abundant in early summer; deficient in midsummer and early autumn; in late autumn extraordinarily good. *Live Stock* thrived very well; steady progress; cattle and sheep free from disease. *Clip of wool*—Average in quantity and quality.

WIGTOWNSHIRE. *Wheat*—Very little wheat now grown in the county except on a few farms in the Moss of Cree; about 42 bushels; grain and straw both good quality; 4 bushels sown per acre. *Barley*—Not much grown; straw generally short, but grain fair; about 36 bushels per acre. *Oats*—A very variable crop; on light and dry land very badly burnt with the drought and too quickly ripened. On deep and loamy land a good crop, coming to harvest about beginning of September; from 32 to 48 bushels per acre; quality of grain and straw good. Seeding, from 4 to 6 bushels per acre, according to method of sowing adopted. *Harvest* began first week of September and finished from 6th to 14th October; from the 15th to the 22nd of September heavy frosts in the

morning and no drying during the day retarded harvesting operations. *Hay*—From 32 to 42 cwt. per acre ; a very good crop and fine quality. *Meadow-hay*—An exceedingly good crop of meadow-hay ; much better got than last season, and in some cases quite as heavy. *Potatoes*—The early potato crop was very good ; the main crop was very variable ; quality generally good ; yield, from 6 to 10 tons per acre. *Turnips*—A fair, sound crop, weighing from 13 to 22 tons per acre ; crop braided well ; not much resowing. *Insects*—No injury by insects. *Weeds*—No weeds, owing, possibly, to dry weather. *Pastures* generally very good. *Live Stock*—Pasture became too dry for dairy cows, owing to the long drought, and thus curtailed the milk supply. Bullocks did not do so well as usual. Sheep thrived very well. Cattle and sheep free from disease. *Clip of wool*—Quite an average.

AYRSHIRE. *Wheat*—43½ bushels per acre ; quality good, above average ; 62½ lb. per bushel ; 37 cwt. straw per acre ; seed sown, from 3 to 3½ bushels per acre. *Barley*—40½ bushels (55 lb.) per acre ; quality average ; 5 per cent less than 1912 ; 29 cwt. straw per acre ; seed sown, 3 to 3½ bushels per acre. *Oats*—48½ bushels (39 lb.) per acre ; quality good, and well got ; 15 per cent less than 1912 ; 27 cwt. straw per acre ; seed sown, 4 to 6 bushels per acre. *Harvest* began about the usual time. *Hay*—1 ton 14½ cwt. per acre ; quality extra good. The weather during hay-making was much more favourable than in average seasons. *Meadow-hay*—1 ton 18 cwt. per acre ; quality good. *Potatoes*—8 tons per acre ; rather less than last season, but the quality was superior. Very little disease ; much less than usual. "Arran Chief" planted in small lots and gave good returns. *Turnips*—21 tons per acre ; much the same as last year ; quality not so regular ; not much resowing required, but braids of later-sown lots were long in coming through want of moisture. *Insects*—Not quite so much damage by insects as average years. *Weeds*—Not so much damage as in some wet seasons. The dry weather enabled the weeds to be kept in check. *Pastures*—Good on deep lands, in good condition, and also in later districts and clay soils, but on lighter lands, near the sea, pastures suffered from want of rain, especially in the autumn months. *Live Stock* generally thrived well where grass was sufficient ; cattle and sheep free from disease. *Clip of wool*—About average.

BUTE. *Wheat*—Very little grown. *Barley*—Very little grown ; under average ; about 40 bushels. *Oats*—An average crop, about 40 bushels ; 5 bushels sown. Grain and straw, fair quality ; some stacked rather early and had to be turned out again. Cutting began last week of August, but not general till the first week in September ; good harvest weather. *Harvest* began a week later than usual. *Hay*—An average crop ; about 2 tons per acre. *Meadow-hay*—average crop ; 2 tons ; 10 cwt. per acre more than last year. Both lots of hay well got, and fine quality, but a very low price for any that could be sold—from £2 to £2, 10s. per ton. *Potatoes*—Under average for the early sorts ; from 4 to 6 tons per acre. Whatever the cause, the number of potatoes at the shaw was considerably less than last year ; but a fair size and fine quality, with very few small potatoes ; no disease. Late potatoes, a full average crop, about 10 tons per acre, also fine quality ; usual varieties planted. Digging began last week of June. *Turnips*—An average crop, from 24 to 30 tons ; very fine quality ; no second sowing ; braided well. Very favourable weather for potato and turnip crop, which increased the weight per acre more than was expected at one time. No damage from insects or weeds. *Pastures*—A good average. *Live Stock* thrived very well ; water had to be carted to some fields ; no

disease except a few tuberculous cows, and a few cases of John's disease, which, I think, is a new name for an old trouble amongst cattle. *Clip of wool*—A fair average; good quality.

ARRAN. *Wheat*—None grown. *Barley*—Very little grown. *Oats*—A fair crop; sown out land rather short of straw on dry ground; seed sown, about 6 bushels per acre; yield, say, 32 bushels; grain heavier than last year; well got at very little extra expense. *Harvest* a week earlier than previous year. *Hay*—About 30 cwt. where early saved; less where long eaten; well secured; ryegrass seed about usual weight per bushel, and quality very fine; quantity about usual. *Meadow-hay*—Very little grown; well secured. *Potatoes*—An average crop, about 6 tons per acre; rather more small, especially on light land; quality good; very little disease. A few acres of Arran Chief variety planted, which grew an extra crop and no disease; quality very good. *Turnips*—Say 15 tons; at first looked like a light crop, but grew well in the autumn; not much finger-and-toe; wood-pigeons bad on the plants when newly singled. Insects did little harm. Very few weeds owing to the dry season. *Pastures*—Quality good; growth barely up to the usual owing to the dry season. *Live Stock* did very well. No disease in cattle; some foot-rot in sheep on soft land. *Clip of wool*—Less than usual; not so well grown owing to wet winter.

LANARKSHIRE (Upper Ward). *Wheat*—None grown. *Barley*—None grown. *Oats*—30 to 36 bushels; 5 to 6 bushels sown. *Harvest* very general first week in September; earlier than last year, and grain better quality. *Hay*—About 1½ tons. *Meadow-hay*—Above the average. *Potatoes*—Potato crop from 5 to 7 tons; very little disease. The new "Arran Chief" appeared on some few farms; good cropper, and excellent quality. *Turnips* braided well; suffered badly from drought in early summer, but getting moisture just in time they turned out a fair crop generally. Very few insects. Weeds not injurious to any extent. *Pastures* considerably above the average. *Live Stock* did very well; cattle and sheep healthy. *Clip of wool*—Quite an average.

LANARKSHIRE (Middle Ward). *Wheat*—The spring of 1913 was cold and wet, and the late summer and autumn was warm and dry and favoured the finishing up of a fair crop of wheat. The straw was plentiful and the grain equal in quality to average years in this district. Grain, 30 to 40 bushels; straw, 30 to 40 cwt.; seed sown, 3½ to 4 bushels. *Barley*—None grown. *Oats*—On heavy land oats were a good crop, but on the lighter soils and on soils in poor condition the oats were light. Oats after green crop suffered most from drought, and were short in the straw. Grain good quality, except on a number of farms where the ingathering proceeded too rapidly before the sheaves were thoroughly matured. Grain, 40 to 50 bushels; straw, 20 to 35 cwt.; seed sown, 5 to 6 bushels. *Harvest* was a little late, and there was not enough of drought to dry the grain sufficiently, but there was no sprouting in the stook. *Hay*—Ryegrass and clover hay were extremely heavy crops, and generally got in good condition. Weights ranged from 30 cwt. to 2½ tons per acre. Prices in July and August, £2, 10s. to £3 per ton. *Timothy Hay* gave a yield of 2 to 3 tons per acre, and was secured in good condition. *Potatoes*—The braird of potatoes was uneven owing to the wet spring, but with the finer autumn the crop turned out rather over the average. The average weight per acre would amount to from 6 to 12 tons. *Turnips* were a very uneven crop, but did not show much disease. The yield would be from 12 to 30 tons per acre. No

injury by insects or weeds. *Pastures*—The pasture was late in starting, but during the later months it was abundant and plentiful. *Live Stock*—Stores and fat stock have been high in price; cattle have been free from disease. *Clip of Wool*—There are no sheep in this ward.

LANARKSHIRE (Lower Ward). *Wheat*—50 bushels; good quality, much better than last year; straw, 2 tons; 4 bushels sown. *Barley*—Little grown. *Oats*—50 bushels; straw an average crop; quality good; 6 bushels sown. *Harvest* about the usual time; weather suitable for the district; crops secured in good condition. *Hay*—Ryegrass and clover about 2 tons; *Timothy*, 2 to 3 tons; quality good; superior to last year. *Meadow-hay*—None grown in the district. *Potatoes*—Crop variable; good on suitable land only; 6 to 8 tons; not much disease. *Turnips*—Under an average; midsummer too dry and stopped growth; 10 to 15 tons per acre; braird good—only one sowing; no injury by insects; weeds injured less than crop more than usual. *Pastures* suffered by drought during midsummer; autumn and early winter pasture very good. *Live Stock* did very well; cattle and sheep free from disease. *Clip of wool*.—Nil.

RENFREWSHIRE. *Wheat*—About 42 bushels; straw shorter than last year, but fine quality; about 4½ bushels sown to the acre. *Barley*—Very little grown. *Oats*—About 46 bushels; threshed well; straw not so heavy as last year, but fine quality; 5 bushels seed to the acre. *Harvest* began much about the same time as last year; ten days broken weather delayed the stacking, but little stuff spoiled; only those suffered who hurried things too much. *Hay*—This crop was quite up to average, and, as a rule, got in very good condition. *Meadow-hay*—Very little now grown in county, but that quite up to former years. *Potato* crop did not turn out so well as expected, the long drought having told on results, especially on light soils; 7 to 8 tons would be a fair average over all; very little disease. New varieties—"Arran Chief," "Pioneer Queen," "Scottish Triumphs," and "Rising Sun." *Turnips* were slow to braird in most places, and the crop over all not quite so heavy as last year. No injury by insects or weeds where land attended to. *Pastures* quite as profitable as last season. *Live Stock* thrived well; cattle and sheep free from disease. *Clip of wool*—Quite up to average.

ARGYLLSHIRE (Lochgilphead). *Wheat*—None grown. *Barley*—None grown. *Oats*—6 quarters per acre; grain and straw, good quality; not so much bulk of straw as last year; seed sown, about 5 bushels. *Harvest* a little later than usual, but a few days earlier than last year. A very good harvest except for those who were in too great a hurry. *Hay*—Ryegrass hay rather better than last year; about 1½ tons; good quality. *Meadow-hay*—A good crop, and well got; just about last year's crop. *Potatoes*—Potato crop better than last year; about 7 tons per acre; not much disease; no new varieties planted. *Turnips*—Just about last year's crop—say 20 to 25 tons per acre; crop braided well, and no second sowing required. Free from finger-and-toe this year. Crops not injured by insects. No weeds worth mentioning; owing to dry weather they were easily killed. *Pastures* of quite average growth, but hardly so rough as last year. Very good quality. *Live Stock* thrived very well; cattle and sheep both free from disease. *Clip of wool* not so good nor so heavy as usual owing to backward spring and sheep being lean.

ARGYLLSHIRE (Kintyre). *Wheat*—None grown. *Barley*—Straw not so good as last year, but grain quite as good; from 40 to 48 bushels; seed

sown, about 4 bushels ; well harvested except in exceptional cases where taken in rather hurriedly. *Oats*—Straw not so good as last year ; grain also less ; from 45 to 55 bushels ; seed sown, about 5 bushels. *Harvest* a fortnight sooner than last year ; good weather, but want of drying winds ; a good deal of heating in stack. *Hay*—Ryegrass hay rather over an average, and all well got ; fully 2 tons per acre. *Meadow-hay*—Exceptionally good both as regards quantity and quality. *Potatoes* better than last year ; from 6 to 8 tons ; very little disease. A few Arran Chiefs planted, with good results. *Turnips*—Better than last year ; from 20 to 25 tons, and some the length of 30 tons ; no second sowing. The crops were not injured by insects or weeds to any extent. *Pastures*—Better than last year ; burned up a little in midsummer, but stood out well in the back-end. *Live Stock* thrived quite well. Cattle and sheep free from disease ; heavy death-rates amongst sheep owing to the bad spring, but very little braxy in hogs. *Clip of wool*—Fully an average, considering the heavy death-rate.

ARGYLLSHIRE (Islands of Islay, Jura, and Colonsay). *Wheat*—No wheat grown. *Barley*—Practically none grown. *Oats*—Quantity of straw less than last year ; quality similar to last year ; increase in grain and improvement in quality ; yield of grain about 24 bushels per acre ; seed sown, 4 to 5 bushels per acre. *Harvest* began at usual time. *Hay*—Better crop than last year ; $1\frac{1}{2}$ to 2 tons per acre ; secured in good order. *Meadow-hay*—Similar to last year. *Potatoes*—A good crop, fully over the average, and of excellent quality. No disease. *Turnips*—The turnip crop was an exceptionally good one ; commencing with a good braird, the crop did exceedingly well throughout the whole year ; no resowing. No injury by insects or weeds. *Pastures* were of average growth and quality. *Live Stock*—Stock of all kinds did well. There was a second growth of grass in the back-end. Lambs got very fat in September and October, and braxy was very bad. With the exception of braxy in hogs both sheep and cattle were very free from disease. *Clip of wool*—Quality good ; average clip.

DUMBARTONSHIRE (Lower). *Wheat*—Quality good ; quantity about 34 bushels ; seed sown, 3 to 4 bushels. *Barley*—None grown. *Oats*—About 36 bushels ; quality good ; straw lighter than last year ; seed sown, 5 to 6 bushels. *Harvest* about a week earlier than last year. *Hay*—About $1\frac{1}{2}$ tons ; quality firmer than last year. *Potatoes*—About 7 tons per acre—at least a ton more than last year. Little or no disease. *Turnips*—About 20 tons per acre. Suffered a good deal from drought ; will not keep (in many cases) so well as last year ; a good braird. No injury by insects or weeds. *Pastures* were of average growth and quality. *Live Stock* thrived fairly well. Cattle and sheep have been free from disease.

DUMBARTONSHIRE (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—About 30 bushels ; quality very good ; straw much lighter than last year, owing to cold weather in May and drought afterwards ; from 5 to 6 bushels of seed sown. *Harvest* began 10 days earlier than usual. *Hay*—About $1\frac{1}{2}$ tons per acre ; quality very good. *Meadow-hay* was a better crop than last year, and was got in the best of order ; in fact, it was the shortest hay-time in the reporter's experience. *Potatoes*—About 6 tons per acre ; better crop than last year ; hardly any disease ; "Arran Chief" was the only new variety planted. *Turnips*—Weight about 22 tons ; quality good ; braird good ; no resowing required. No injury by insects. Weeds easily kept down.

Pastures—Hardly an average, owing to occasional frost at night. *Live Stock* thrived very well. Cattle and sheep have been free from disease. *Clip of wool*—Fairly good, but under the average.

STIRLINGSHIRE (Western District). *Wheat*—None grown. *Barley*—None grown. *Oats*—Grain and straw good. The straw was rather short on red land, about 38 bushels; seed about 5 bushels. *Harvest* started about one week earlier than in 1912. Although the weather was pretty broken, in most cases the harvest was well got. *Hay*—About 1 ton 15 cwt.; quality very good; all well got. Rather more clover. *Meadow-hay*—Rather more than last year. Quality good. *Potatoes*—8 tons; very good quality; free from disease. No new varieties planted. *Turnips*—About 35 tons; very fair quality; only one sowing. No damage by insects. *Weeds*—Some redshank; very little damage. *Pastures*—Not so good as last year; suffered very much from drought. *Live Stock* did not put on so much flesh as usual. Cattle and sheep were free from disease. *Clip of wool*—Fair quality; about the average clip.

STIRLINGSHIRE (Eastern District). *Wheat*—48 bushels; good quality; some fields thin on ground; 3 bushels seed. *Barley*—44 bushels; good quality and good straw. *Oats*—48 bushels; good crop; firm straw; some heated in stack. *Harvest* about a week earlier. *Hay*—Well got; very good quality; 32 to 45 cwt. per acre. *Meadow-hay*—Good crop. *Potatoes*—Very good crop of first quality; 8 tons per acre. *Turnips*—Middling crop; some disease; 25 tons per acre. No damage by insects or weeds. *Pastures* grew well in June and July; too dry after. *Live Stock*—Did only fairly well; too wet in spring; too dry in August and September. Cattle and sheep were free from disease. *Clip of wool*—Fairly good clip; not so heavy as last year.

CLACKMANNANSHIRE. *Wheat*—Only an average crop, or perhaps a little under the average; the crop was short in straw. In late districts it was damaged by too much wet in harvest; yield from 36 to 40 bushels per acre; 3½ to 4 bushels sown. *Barley*—Inferior in quality, being damaged in colour after cutting; yield, 33 to 36 bushels. *Oats*—A rather short crop, owing to dry weather in the early summer; short in both straw and grain. Where cut early it was secured in good condition, but where cut late it suffered from wet weather; yield, 35 to 40 bushels; 4 to 5 bushels sown. *Harvest* commenced a little earlier than last year; at the beginning it was fairly dry but very wet towards the end. *Hay* was a smaller crop than last year, but fairly well got; yield, 1 ton 10 cwt. to 1 ton 15 cwt. per acre. *Meadow-hay*—A fairly good crop, and was well secured; although perhaps not so bulky it was superior in quality to last year. *Potatoes*—On heavy land the yield was above the average, but on light land the crop suffered from drought and did not turn out well. On good soil, where they did well, the quantity and quality were superior to last year; there was little or no disease; not many new varieties planted. *Turnips* were a much less crop than last year; the quality was very good, and they are keeping well in the pits; the yield would be from 15 to 18 tons per acre; the crop braided well, and there was very little resowing. There was very little damage by insects; the late-sown turnips did not braid very fast, yet the insects did little or no damage. *Weeds* were not troublesome in the early part of the season, but later on, owing to wet weather, they were more difficult to keep under. *Pastures*—This was a fairly good grazing season, with a good supply right through; a little better than last year. *Live Stock*—Stock thrived well on the grass. Cattle and sheep were free from disease all

through the season, except "foot-rot" in sheep, which was a little troublesome in wet weather. The *Clip of wool* was fully up to the average, and of good quality, and still making good prices.

FIFESHIRE (Middle and Eastern District). *Wheat*—The yield varied from 32 to 44 bushels, with a probable average of about 35 bushels per acre of grain, and 32 cwt. of straw. The quality, where secured in good order, is generally excellent, and much superior to the crop of 1912. The seed sown is from $3\frac{1}{2}$ to 4 bushels per acre. *Barley*—This cereal varied very much this year. On the earlier farms, where secured in keeping order, and before the break of the weather at the latter end of September, it was a good crop; but in many cases where sown in a bad seed-bed the yield was disappointing. The yield varied from 32 to 40 bushels, with a probable average of 34 bushels per acre of grain, and about 25 cwt. of straw. A considerable amount has heated in stack, and has been discoloured through rain; seed sown, from $3\frac{1}{2}$ to 4 bushels per acre. *Oats* was a shorter crop than in 1912, due to the dry summer. On good deep land the yield varied from 44 to 50 bushels, or an average of about 46 bushels per acre, with 18 cwt. of straw. On many fields of thin land the yield did not approach this estimate. The crop has been greatly damaged by heating in stack, and by rain in stook. The seed sown varies from 4 to 6 bushels, according to variety. *Harvest*—The harvest began a few days earlier than in 1912, and twelve days later than in 1911. *Hay*—Hay was a most excellent crop—probably the best both for quantity and quality for many years. Clover plants plentiful, and averaging a return of $2\frac{1}{2}$ tons per acre. *Meadow-hay*—The same applies to meadow-hay; it was a good crop, and more productive than in 1912. *Potatoes*—The yield of the potato crop was much less than in 1912, due to the wet state of the land at planting, and the hard crust created by the dry weather; a general average of the quantity raised would be 5 tons per acre, with little or no disease. The new varieties which did well were "Arran Chief" and "Templar." "Summit" variety grew rough and had second growth. *Turnips*—Turnips probably 25 per cent less than in 1912; the average weight per acre would be from 16 to 20 tons, according to variety; the plants braided well, and there was no resowing required. The growth was checked by drought, and in the case of those sown in May (with few exceptions) by mildew. Very little injury by insects. *Weeds*—The oat crop was damaged by the presence of runch and charlock, which were abundant on light gravelly soils. *Pastures*—Pasture was unusually abundant in June, but the continuous dry weather in July and August caused it to become very dry and deficient in nutritious properties. *Live Stock*—The stock thrived very well, particularly sheep, where grass was abundant, and continued doing so when the grass failed in August, when supplementary food was given. There are still some cases of actinomycosis or wooden tongue in cattle, and during the late autumn the death rate in sheep was greatly above the average. *Clip of wool*—The quality and quantity of wool would, from low-ground sheep, be over the average.

FIFESHIRE (Western District). *Wheat*—Little wheat is threshed in the autumn in this district unless for seed samples. The probable yield will run to 36 bushels per acre, while the straw will be under the average. The usual seeding is 4 bushels by hand—with a driller slightly less. *Barley*—Barley will yield 40 bushels per acre, and in some cases may be even more. The grain is, however, of high colour, but the straw is of good quality; seeding, 4 bushels per acre. *Oats*—Oats vary in yield, according to variety sown; may be reckoned, however, from 48 to 60 bushels per acre; the straw was a light crop, but is making good fodder

for stock; seeding, from 4 to 6 bushels per acre. Much damage was done to this crop by heating in the stack. *Harvest* began about the 20th August, and later, according to the district. This was about 10 to 14 days earlier than the average. *Hay*—This was generally a good crop on most farms, and of good quality, being well secured. Yield, about 2 tons per acre, and in some cases even more. *Meadow-hay*—Meadow-hay on bog lands was also a good crop. *Potatoes*—Potatoes have turned out a bulkier crop than was at one time expected, and will yield about 6 tons per acre. No disease is to be found. *Turnips*—Turnips on most farms are to be short of requirements unless we have a mild spring. The roots grew very little during the dry weather in early summer, and were slow to come to the hoe, especially on hard land. No reports of damage by insects. *Weeds*—The green crop being short of foliage, annual weeds appeared to cause some trouble on wet lands. *Pastures* lasted out well, especially in the back end of the year, and all stock did well on them. No reports of any disease. *Clip of wool*—The wool clip of this year may be said to be above the average, and well secured in dry condition.

PERTHSHIRE (Western District). *Wheat*—The yield of straw would barely be an average, but the grain is a full average, both as regards yield and quality; 38 bushels; seed, 3 to 3½ bushels. The area of wheat sown was rather less than in former years. *Barley*—Straw a short crop, but average yield of grain, of excellent quality; about 32 bushels; seed, 3½ bushels; a less area of barley was sown than in the previous year. *Oats*—The yield of straw was under the average, as the crop ripened prematurely. The yield of grain is of full average, and the quality is excellent. Yield, 40 to 42 bushels on strong land, and 34 to 36 bushels on dry-field farms; seed, 4 to 4½ bushels. *Harvest*—As a result of the continued drought the harvest commenced about a fortnight to three weeks earlier than last year, but in many districts the weather broke before half the crop had been secured, and consequently the harvest was somewhat prolonged. *Hay*—On carseland the yield would be about an average, but on dry-field land it would not be an average. The quality of the hay was excellent in both cases; yield on carseland, 36 to 38 cwt.; on dry-field farms, 25 cwt.; timothy-hay on carseland, 40 cwt.; meadow-hay under an average crop. *Potatoes*—An excellent crop; the best for some years; 8 to 10 tons per acre and of first-rate quality; mostly the well-tried varieties grown in this district. *Turnips*—Not an average crop—14 to 18 tons; quality not quite so good as in former years, as the sudden start of growth after the rains came in October seems to have affected the quality of the roots; braided all right, but didn't show a vigorous growth after thinning. The crop was not injured by insects, and the dry weather facilitated keeping down the weeds. *Pastures*—On old grass lands the pastures did not suffer from the drought, but in the case of pastures from one to three years' old, on dry-field lands, the growth was very poor. *Live Stock*—Stock did not do too well on pastures of any kind, and in many cases left nothing for their summer's keep. Store cattle and sheep were very dear to buy in spring. Cattle and sheep were free from disease. *Clip of wool*—The clip of wool would be fully an average generally, though in many cases it would be under the average, as in some districts the ewe stock came through a most trying winter. The quality of wool would vary a good deal, and, generally speaking, it would not be quite an average in that respect.

PERTHSHIRE (Eastern District). *Wheat*—A very good crop, and very fine quality of both grain and straw; yield, about 36 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—A good average crop of fair

quality; yield, about 36 bushels per acre; seed, 3 to 4 bushels per acre. *Oats*—Rather small in bulk but good quality; yield about 44 bushels per acre; seed, 4 to 6 bushels per acre. *Harvest* about a week earlier than usual, but was much protracted on account of bad winnowing weather. There was little rain, but a great want of sun and wind, consequently a good deal of grain was carried too soon and heated in the stack. *Hay*—Hay crops were very good—bulky, of good quality and well secured; yield, about 40 cwt. per acre. *Meadow-hay*—Very little grown. *Potatoes*—Not so good as last year; too much rain in spring, and many planted under bad conditions; yield, 5 to 6 tons per acre; "Up-to-Dates," "Dalhousies," &c., showed a good proportion of disease, especially after being pitted. "Arran Chief" did exceedingly well as a new variety, also "Ajax." Both are very big croppers and sound. *Turnips*—Good crop and sound; yield, about 25 tons per acre. *Insects*—Not more damage than usual. *Weeds*—Much of the turnip land could not be satisfactorily cleaned before sowing on account of excessive rainfall in May. *Pastures*—Very good in early part of season; very dry and bare afterwards. *Live Stock*—Did fairly well. Cattle and sheep were free from disease. *Clip of wool*—About an average.

PERTSHIRE (Central District). *Wheat*—The acreage under wheat was fully larger than during the previous year. About 31 to 33 bushels per acre. Straw was of excellent quality, and on most farms it was very bulky; 4 to 5 bushels sown. *Barley*—Barley was a fair crop, but on account of the close weather during harvest the samples were not good. A few farmers were able to secure their barley in first-class order, and in consequence got an exceptionally good price for it. From 29 to 35 bushels per acre; 4 to 5 bushels sown. *Oats*—The oat crop was a bulky one. In some districts it was well harvested, but in others the stacks began to heat two weeks after they were built, and the result was that both the oats and the straw were discoloured. The early districts suffered most in this respect. The late districts got an exceptionally good harvest, and oats and straw were of first quality. Yield from 40 to 45 bushels; seed from 4½ to 6 bushels per acre. A great many seed drills are now used in this district, and the result is that from a bushel to a bushel and a half of grain can be saved by sowing in this way. *Hay*—Hay, ryegrass and clover, was a very good crop, and was got in the best of order. The average yield would be about 30 cwt. to the acre. *Meadow-hay*—The crop was a good one; average yield about 25 cwt. to the acre. *Potatoes*—During the past few years a very much larger area of potatoes has been grown in this district. The land is suitable for early potatoes, and the price given for these leaves a good margin of profit. There was practically no disease, and the bulk of dressed potatoes would range from 7 to 9 tons per acre. The potatoes grown are British Queens, Dates, Dalhousie, Main Crop, and Langworthy. *Turnips*—In the early part of the year the turnip crop on many farms looked sickly, but after the month of July they improved rapidly, and the result was that the crop at the fall of the year was an average one, ranging from 12 to 27 tons per acre. On some farms finger-and-toe was reported. *Pastures*—Pastures as a whole were fair. On some of the very dry farms the grass was a little scorched, but on others it was luxurious. *Live Stock*—Live stock, both cattle and sheep, have been free of disease. *Wool Clip*—The wool clip was up to the average, and the prices obtained were the highest for many years.

PERTSHIRE (Highland District). *Wheat*—No wheat sown in the district. *Barley*—The sowing of barley is almost a thing of the past; any small patches sown had short straw, but good sample of grain. *Oats*—Oats after lea short in straw, but a fair average of grain per acre;

42 bushels; lighter in weight per bushel, but colour and quality very good. Oats after roots short in straw; grain light but of good quality; 34 bushels. *Harvest* general about the 5th September, which is an average date of commencement; very expeditiously harvested, but in many cases stacked far too early, and much of the straw and grain heated. *Hay*—Clover hay above an average crop, and very well got; where land was of any depth, and well farmed, 30 cwt. *Meadow-hay*—Less in bulk than last year, more especially where sheep were pastured on it late. Owing to the drought of July and August it matured without getting to full length. *Potatoes*—Much less ware, and a large proportion of small; about $5\frac{1}{2}$ tons; no disease. The area of potatoes planted much under that of recent years, and not any new varieties; quality very good. *Turnips*—About 12 tons; quality exceptionally good, but want of sufficient moisture after being thinned left them small in size; crop braided well, and no second sowing; suffered from mildew or too light soils, but medium soils kept green, with heavy tops. Did not suffer from any insects. Kept very free of weeds, and the damage much under average years. *Pastures* above the average of the last two seasons; early, and of rich good quality. *Live Stock*—Stock of all kinds did well; and owing to the amount of sunshine and dry weather, took on condition very fast, both on parks and hill ground. Both cattle and sheep quite free from disease. *Clip of wool*—Owing to the severity of the winter and the cold wet weather in May the quality of wool clip was under the average, and the bulk much less in the majority of cases.

FORFARSHIRE (Western District). *Wheat*—A good crop; threshing very well; 40 to 44 bushels per acre, and plenty of straw; seed, 3 bushels drilled; 4 bushels broadcast. *Barley*—Not up to last year's crop. Some fields very poor owing to May floods followed by a very dry season; 26 to 32 bushels; seed, 3 bushels drilled, $3\frac{1}{2}$ to 4 broadcast. *Oats*—With continued drought much of this crop was spoilt, "skellies" and other weeds smothering it. Many good fields were seen, however, and the quantities of grain varied greatly—from barely sufficient to seed the ground in some instances up to 60 bushels in others. Seed, depending on variety, 3 to 5 bushels drilled, 4 to 7 broadcast. *Harvest* earlier than usual, but very protracted owing to continued damp weather. *Hay*—Generally a capital crop of hay and extra well secured—40 cwt., and in some instances up to 60 cwt. *Meadow-hay*—Little meadow-hay made. *Potatoes*—This crop was under the average of the last few years; 5 to 7 tons; very little disease. *Turnips*—A small crop in October, but grew well after that time, and some good crops to be seen, although under the average; 16 to 24 tons. No damage by insects to any extent. *Weeds*—Some grain choked by "skellies." *Pastures* very bare, but later did well. *Live Stock* did well, considering bare pasture. Cattle and sheep had no disease to speak of. *Clip of wool*—About an average.

FORFARSHIRE (Eastern District). *Wheat*—A good average crop, with 36 bushels grain and 30 cwt. straw. Much of the grain damaged through sprouting in the stook and heating in the stack. Seed, 3 bushels per acre drilled, and 4 bushels sown broadcast. *Barley*—A very variable crop, on the lighter soils yielding poorly, but on better land a fine yield of up to 48 bushels per acre, with straw about 22 cwt.; grain badly damaged, either by weather or by heating. Any secured in good order, and which kept sound, is weighing 57 lb. to 58 lb. per bushel; seed, 3 bushels per acre drilled—this practice being almost universal in the case of barley. *Oats*—Grain and straw a fair crop, but mostly very badly damaged by weather, the loss of the straw for stock-feeding purposes being very heavy. Yield, say, 48 bushels per acre, and 25 cwt.

straw. Seed, ordinary potato oats, 4 bushels per acre, and the newer, thick-skinned varieties 6 to 7 bushels. *Harvest* commenced early, about the 20th of August, but was not concluded until into October—practically a seven weeks' harvest. *Hay*—A good crop, well up to 50 cwt. per acre, and all of good quality and excellently made. *Potatoes*—The smallest crop for several years; from 6 to 8 tons, according to soil. Some disease amongst the "Up-to-Date" varieties, but none whatever amongst kinds of the "Northern Star" and "President" type. *Turnips*—Yellow turnips a poor crop; ten tons per acre short of an average, but swedes a good and very sound crop, averaging about 26 tons per acre. Crop braided well, and no second sowing required. No injury by insects or weeds, although thistles were everywhere very abundant. *Pastures* were of average growth and quality, unless on very light soil, where grass was badly burnt up. *Live Stock* thrived exceedingly well; cattle and sheep have been practically free from disease. *Clip of wool*—A fair good clip of excellent quality.

KINCARDINESHIRE. *Wheat*—A better crop than last year; from 40 to 45 bushels per acre, of excellent quality; fair quantity of straw, also of good quality; seed, 3 bushels drilled, and 4 bushels sown broadcast. *Barley*—Good average crop; 38 bushels grain and 17 cwt. straw per acre, both of excellent quality; seed, 3 bushels drilled, and 4 bushels sown broadcast. Not quite such a bulky crop as last year, but better quality. *Oats*—Quite an average crop of 44 to 46 bushels grain, and 18 cwt. straw, both of excellent quality; seed, 4½ bushels drilled, and 5½ to 6 sown broadcast. *Harvest* commenced 10 days earlier than usual, but was very protracted towards the end owing to the continued wet weather, and a portion of the crop suffered in consequence. *Hay*—Hay a rather lighter crop than last year, but much better in quality—rather deficient in clover, partly due to the dry hot weather during the early part of the summer. The crop was secured in excellent order. Average weight about 32 cwt. per acre. The aftermath was poor. *Meadow-hay*—Almost none in the district, consequently no reliable information can be given. *Potatoes*—A good crop of very fine quality, with little disease; average weight from 6 to 8 tons per acre. No new varieties in the locality. *Turnips*—The crop braided all right, and no second sowing was required. After hoeing they came rather slowly during the early part of the summer, but after the rain they made great progress, and finished a full crop of from 20 to 24 tons per acre. Very little injury done by insects—certainly less than usual. *Weeds*—Owing to the dry weather in the early part of the summer weeds gave little trouble, and after second hoeing they completely disappeared. *Pastures*—Grass was good quality, and grew fairly well during the early part of the summer, but suffered later from want of moisture. *Live Stock*—Stock thrived very well during the fine summer weather, but less stock grazed than in average years. Cattle and sheep fairly free from disease. *Clip of Wool*—The clip of wool was quite an average one both as to quality and quantity.

ABERDEENSHIRE (Buchan District). *Wheat*—No wheat grown. *Barley*—About the average acreage sown with bere or barley. The yield of barley was fully the average; quality fair, not so heavy as some years—from 54 to 57 lb.; seed sown, about 4 bushels per acre. *Oats*—The oat seed time was rather unsettled, and the summer months were very dry until harvest. In many cases the cutting was practically finished during this dry period, but in the later districts the cutting was scarcely commenced when the weather broke, and unsettled weather set in for some time, thus colouring the cut oats. Although not over-abundance of straw, the

grain is turning out well and above last year's results ; weight per bushel, 40 to 42 lb. ; amount of seed per acre, about 6 bushels. Latest harvest crop got in in good order. *Harvest* a little earlier than usual, commencing in early part of September. *Hay*—Ryegrass and clover hay was secured in excellent condition ; weight, 20 to 25 cwt. per acre. *Meadow-hay*—None grown in this district except in a few exceptional cases. *Potatoes*—The potato crop was both abundant and of excellent quality, and free from disease. *Turnips*—The turnip crop was got in in very good order during the summer. The very early sown showed signs of growth being retarded from lack of moisture, but after the rain in September the turnips made exceptionally good progress, especially very late-sown ones. Weight per acre would be from 16 to 24 tons. No injury by insects. The oat crop after turnips in many cases suffered from weeds, such as sorrel and yarr. Damage to this crop much greater than usual. *Pastures* of average growth and quality during the early summer, but fell off considerably in autumn from lack of moisture. *Live Stock* did fairly well in early part of season ; cattle and sheep free from disease. *Clip of wool*—About average.

ABERDEENSHIRE (Formartine District). *Wheat*—None grown. *Barley*—Last year 30 bushels ; this year 36 bushels, with average bulk of straw ; bushel weight about 56 lb., or 3 lb. more than last year ; quality good. Seed sown, 4 bushels. *Oats*—Last year 38 bushels ; this year 40 bushels, with 10 per cent less than an average bulk of straw. The bushel weight is about 43 lb., or 1½ lb. above last year ; quality fair, but colour dark owing to bad weather in harvest ; seed, 5 to 7 bushels. *Harvest* began about the usual time. The weather was calm and unsuitable for drying the crops ; sprouting of grain in the stook and heating in the stack were common. Some heavy rain-storms did much damage to the crop. *Hay*—Crop about 30 cwt., or 3 cwt. more than last year. The quality is excellent, the whole crop having been secured under perfect conditions as regards weather—viz., brilliant sunshine and drying winds. *Meadow-hay*—None grown. *Potatoes*—A great crop ; about 7 tons, or 3 tons more than last year ; no disease ; quality excellent. *Turnips*—A fine crop ; about 20 tons per acre, or the same as last year. The crop was backward in the first part of the season owing to dry weather, but improved greatly during autumn ; crop braided well ; almost no resowing required. Not much damage by insects—less than usual ; and very little damage by weeds. *Live Stock*—Pastures were of average growth and quality ; stock thrive very well ; cattle and sheep free from disease.

ABERDEENSHIRE (Strathbogie District). *Wheat*—None grown. *Barley* gave a good crop in Strathbogie ; while smaller as regards bulk of straw than in 1912, there was simply no comparison as regards quality of both straw and grain where the crop was well harvested, but unfortunately considerable damage was caused by sprouting in the stook, and in not a few cases heating in the stack. The grain has been of heavy weight, ranging from 55 to 57 lb. per bushel, and the yield may be stated at about 38 bushels per acre. *Oats* were also generally short of straw, but where no damage resulted the quality of both fodder and grain is first-class. Grain produced upon strong land is generally of heavy weight, ranging from 41 lb. to 42 lb. per bushel. All over, the crop may give an average return of 40 bushels per acre. *Harvest* was earlier than usual, but on account of a spell of damp weather work was greatly interrupted, so that in not a few cases the work was prolonged beyond the usual period by a month or thereby. *Harvest hands* were

scarcely available, so that not a few farmers reaped and carried the whole of their crops without any extra assistance. *Hay* generally was under an average crop, the dry season having greatly interfered with the growth of clover. The quality, however, was excellent, the weather being all that could be desired when the crop was being cut, cured, and secured in stack. *Potatoes*—The yield of the potato crop was rather variable, mainly resulting from unusual damage by crows in the early portion of the season. One noticeable feature of the crop was the extraordinary size of many of the tubers, such a proportion of large sizes being scarcely ever seen on Bogieside. The quality of the tubers all over was unusually good. *Turnips*—The turnip plants came away nicely to the hoe, and did uncommonly well until a prolonged spell of dry weather, which continued till the end of August, interfered with the growth of the roots and gave them a temporary check. In September, however, the roots showed fresh vitality, which continued till the close of the season, when the crop attained its usual weight. No damage whatever by insects; there was no particular damage by weeds to any of the crops. *Pastures*—The pastures did well during the greater part of the season, there being merely a temporary scarcity about the end of August and beginning of September. The rains of September put fresh life into the pastures, which in the course of a week or two again became quite plentiful. *Live Stock*—The stock generally did well; indeed this is always the case when the weather is moderately mild and dry, so that they have a comfortable bed to rest upon; cattle and sheep free from disease. *Clip of wool*—The general quality of the wool clip was excellent, and the weight was quite up to an average.

BANFFSHIRE (Lower District). *Wheat*—No wheat grown this year. *Barley*—There was a large acreage under barley this year, but farmers have got a big disappointment owing to the drop in price; 4 bushels seed sown; threshing very well, 40 to 44 bushels per acre; good quality, weighing 56 to 58 lb. per bushel. *Oats* were a very good crop in this district; 48 to 54 bushels per acre; 42 to 46 lb. per bushel; not so bright in the colour owing to ten days' wet weather after being cut. *Harvest*—The harvest began in this district about third week of August, but proved a very long, slow harvest, owing to the wet, mild weather after cutting was finished. *Hay*—Just a fair crop, $1\frac{1}{2}$ to 2 tons per acre; ryegrass and clovers were not so strong as last year. *Meadow-hay*—None grown in this district. *Potatoes*—The potato crop was very variable in this district; on good land a very good crop, but on light, dry land very poor owing to dry weather in July and August; 6 to 8 tons per acre. *Turnips* came up very well to the hoe; no second sowing required; there was a good deal of finger-and-toe. Turnips improved greatly owing to the good autumn; 20 to 25 tons per acre. No grub in the grain crops. No injury by weeds. *Pastures*—The pastures this season were very good, especially in the early summer, but got rather dry in July and August. *Live Stock* did very well on pastures this year; very little disease among cattle and sheep. *Clip of wool*—The quality of the clip of wool was very good, and the quantity was well up to the average.

BANFFSHIRE (Upper District). *Wheat*—None grown. *Barley*—The area under barley has been restricted for some years in these upper regions owing to dangers of early frosts. The crop this year was only fair—scarcely up to 4 qrs. an acre; and the prices have been disappointing—as low as 23s. per qr. The common seeding is about 4 bushels per acre. *Oats* came on well, with a fine summer and warm weather throughout; a well-matured crop of 4 to 6 qrs. per acre, according to

variations in soils, and the weights are above the standard, being up to 44 lb. per bushel. Oats are seeded variously from 5 to 8 bushels an acre. The price is very low for the quality—from 16s. to 18s. per qr. *Harvest*—The harvest was carried through in the uplands most expeditiously. There was a general resort to the use of self-binders, due to the dearth of manual labour. All was under "thack and raip" in the month of September. *Hay*—The hay crop suffered somewhat from lack of moisture, but was made up in excellent order; returns vary according to thickness of clover—some as low as 100 stones, while 200 might be reached on loamy soils. *Meadow-hay*—Scarcely any. *Potatoes* were rather stiff in growth, and are of less bulk than last year. They are only grown for home consumpt. *Turnips* came along finely to hoe, and for some time after; then they suffered a bit from lack of rain; however, they freshened up and became an average crop. There are complaints of canker on the 5-shift course. Quite free from any damage by insects. Capital weather during the cleaning of the turnip fields completely subdued every species of weeds. *Pastures* were plentiful and nutritious from early in the season until the end of August. *Live Stock* thrived profitably, and stall-feeding being early available, there was no great want. No disease to speak of among cattle and sheep. *Clip of wool*—A fairly good clip, with quite remunerative prices, both for young sheep and wool; flockmasters are having a good time.

MORAYSHIRE. *Wheat*—Less and less grown every year. *Barley*—A fair crop for quantity. What was secured before the break in the weather in September was extra good quality. That in the stook in September was discoloured. Late crops fully above average. Average, 35 bushels per acre, or $\frac{1}{2}$ bushel more than last year; straw, 40 cwt.—same as last year. Bushel weight of grain above standard; seed sown, from $3\frac{1}{2}$ to 4 bushels. *Oats*—Weather remarks same as barley. Generally a good crop of both grain and straw. Grain, 46 bushels, being $2\frac{1}{2}$ bushels more than last year; straw, 48 cwt., being 3 cwt. more than last year. Quality of both good except where damaged in the stook. Seed sown, 5 to 7 bushels per acre. *Harvest*—About the usual time, beginning early in August in the earlier parts of the county, and finishing late in October in the later parts. The very early parts and the very late parts had the better weather. The wet weather in September did a lot of damage, especially to barley. *Hay*—A good crop; average 35 cwt., being $1\frac{1}{2}$ cwt. more than last year; quality good. Not so much damaged by bad weather as last year. Ryegrass and clover well proportioned. Yorkshire fog more abundant than desirable. *Meadow-hay*—Little grown in the district. Crop better than last year's good crop. *Potatoes*—The dry weather in spring and early summer greatly impeded the potato crop; much under average; about 4 tons, or 2 tons less than last year. Tubers, small in size; excellent in quality; no disease. *Turnips*—Fair crop—16 tons, or 2 tons less than last year. The crop braided well; little or no resowing. Considerable damage by rooks after singling. Growth severely checked by drought, and saved by the wet weather in September. No injury by insects. *Weeds*—Common spurry, or yarr, was much more plentiful than usual, checking the growth of the grain crop, and being a hindrance to the drying in harvest. *Pastures*—Above the average in the early part of the season; very bare in early autumn, recovering after the September rains. *Live Stock* thrived very well on the whole. No disease amongst cattle and sheep. *Clip of wool*—About the same as formerly; quantity and quality rather over than under average.

NAIRNSHIRE. *Wheat*—Almost none grown. *Barley*—A medium crop of straw, while the grain is of fair weight and quality; 30 bushels per

acre. Less straw than last year, but better grain and more of it owing to continuance of bright weather. Seeding, 4 bushels. *Oats*—On a great number of farms this year this crop was too thin, and consequently only a medium yield was got—say, 40 bushels of middling quality, on account of three days of steady rain while in the stook. This affected the oats more than the barley. Seeding, from 5 to 7 bushels, according to variety sown. *Harvest* started at the usual time. *Hay*—Where the hay crop happened to be growing on the best soil the yield was average, but on thin land the crop was very light owing to too much drought—say, 22 cwt. In most cases clover was rather deficient. *Meadow-hay*—None is secured here. *Potatoes*—Like the hay crop, where potatoes were grown on the best land the crop was quite average, but on thin land it gave a poor return, and undersized tubers were common—say, 5 tons. Little, if any, disease. Dalhousies gave the best results both as regards quantity and quality. *Turnip*—The earliest sowings of turnips braided all right, but later the land got very dry, and the braird was poor and irregular. Some had to be sown twice owing to high wind flattening the drills. This crop looked like being a complete failure, but the rain that spoilt the grain made this crop a fair average one, and of good feeding quality—say, 17 tons. *Insects*—Nothing out of the usual took place in this regard. *Weeds*—Quite normal. *Pastures* were below the average, on account of dry weather, and a good third less than last year's growth. *Live Stock*—If not kept on too bare pasture, stock always thrive better in a dry season. This year both sheep and cattle did well. Very healthy. *Clip of wool*—Quite a good average both as regards quantity and quality.

INVERNESS-SHIRE (Inverness District). *Wheat*—No appreciable difference in quantity grown, which is very little in this district, and the return per acre would be about the same as last year. *Barley*—A good crop, with very heavy weights and promise of good quality, until heavy rain fell for a few days, and caused, for the time it lasted, more sprouting than can be remembered in any former season. *Oats*—A great increase of "Yielder" and other new varieties was sown, but the returns of straw, and in many cases of grain, were disappointing. *Harvest* started about the same time as last year, but was very prolonged owing to the weather and the difficulty in getting people for the work. *Hay*—The hay crop was an excellent one, and would be from 35 to 45 cwt. per acre; secured in grand order. *Meadow-hay*—Very little grown. *Potatoes*—The potato crop was a surprisingly good one. The tubers grew enormously after the rain. They are of good quality and free from disease, with very few small ones. A few new varieties for this district were grown in small lots successfully. *Turnips*—The turnip crop is a fair one. They came away fast enough, but stuck for a time. They don't promise to last too long, and there is a lot of disease. *Insects*—Nothing special to state here. *Weeds*—No damage to speak about. *Pastures*—Better than last year. *Live Stock* did very well on the whole. Cattle and sheep have been free from disease. *Clip of wool*—Good quality; above the average in quantity.

INVERNESS-SHIRE (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats* much the same as last year, heavy land yielding fully more straw; seed sown, about 5 to 6 bushels per acre. *Harvest* began about five days earlier than last year. *Hay*—Clover hay not so heavy as last year. *Meadow-hay* was a record crop. *Potatoes* were a fair crop, only a lot of them were undersized. No disease; no new varieties. *Turnips* were a lighter crop than last year, but very sound. Crop braided well, and

no second sowing. No injury by insects or by weeds. *Pastures*—Hill pastures were never known to be more luxuriant. *Live Stock*—Stock thrived well, and sheep mended very quickly after the severe winter and spring. Sheep have suffered badly owing to bad weather during winter and spring. Death-rate has not been so heavy for thirty-four years. *Clip of wool*—Under the average.

INVERNESS-SHIRE (Lochaber). *Wheat*—None grown. *Barley*—None grown. *Oats*—Grain 4 bushels more per acre than last year; straw less by 20 stones per acre; quality average; seed sown per acre, 6 bushels. *Harvest* began 10 days earlier than last year. *Hay*—An average crop. *Meadow-hay* less than usual. *Potatoes*—10 cwt. less compared with last year. No disease. No new varieties. *Turnips*—1 ton per acre less compared with last year; braided well; no resowing. Damage by wire-worm greater than last year. Weeds less than usual. *Pastures*—Quality not so good as last year. *Live Stock* did not thrive so well as last year. Cattle and sheep have been free from disease. *Clip of wool*—Average.

ROSS-SHIRE (Dingwall and Munlochy). *Wheat*—About the usual number of acres sown; quantity and quality of grain average; straw rather less; seed sown, about 4 bushels per acre. *Barley*—Quantity of grain and straw average; quality average; yield, say 36 bushels per acre; seed sown, about 4 bushels. *Oats*—Quantity per acre average; also of straw; quality fine, though some lots affected with sprout; yield, say, 48 bushels; seed sown, 3 to 6 bushels. *Harvest* began about the usual time, but the latter part was protracted owing to wet weather; grain then suffered through loss of colour and sprout. *Hay*—Hay crop quite average, both of ryegrass and clovers; quantity, $1\frac{1}{2}$ tons per acre; got up in very fine order. *Meadow-hay*—None grown. *Potatoes*—Potato crop and quality very fine; quantity, say 7 tons per acre; no disease; no new varieties. *Turnips*—Turnip crop barely so good as last season; crop braided well. Finger-and-toe serious in a few cases, and canker generally prevalent; yield—swedes, 18 to 20 tons; yellows, 10 to 15 tons per acre. No injury by insects. Weeds not more injurious than usual, but charlock and yarr seriously affected some fields. *Pastures* of average growth. *Live Stock* thrived very well. Cattle and sheep free from disease. *Clip of wool*—Average.

ROSS-SHIRE (Tain, Cromarty, and Invergordon District). *Wheat*—A good crop, averaging probably 48 to 52 bushels per acre; straw, average in weight; 4 to $4\frac{1}{2}$ bushels per acre sown. Crop 50 per cent better than last year. *Barley*—Yield per acre, on good land, 48 bushels; average, 40 bushels. Straw good quality, as crop stood up well; 3 to $3\frac{1}{2}$ bushels sown. Average increase on last year—say 8 bushels per acre. *Oats*—Oat crop is threshing well; on good land up to 60 bushels; average about 48 bushels. Straw of average weight and good quality. Increase on last year's average, 4 bushels per acre; 4 to 6 bushels per acre sown. *Harvest* began a few days earlier than last year—about 20th August. *Hay*, where not grazed in spring, would yield from 2 to $2\frac{1}{2}$ tons per acre; average for district probably $1\frac{1}{2}$ tons. Quality, very good. *Meadow-hay*—None grown. *Potatoes* yielded from 2 to 3 tons per acre more than last year; 8 to 11 tons per acre. Very little disease. *Turnips* a very irregular crop. Where sound, yield of swedes would be 25 to 30 tons per acre, and yellows 20 to 25 tons. Some very heavy crops were grown, but many fields in the district were ruined by finger-and-toe. Crop braided well, and there was little second sowing. No

insect damage to speak of. *Weeds*—The most troublesome weed was charlock. *Pastures* were good till August, when they suffered a good deal from drought. Quality was better than last year. *Live Stock*—Stock thrived well on the whole. Young stock, such as lambs and calves, were distinctly better than last year. Cattle and sheep have been healthy; sheep especially have done well during autumn and winter. *Clip of wool*—Good in quality, and fully average in weight.

SUTHERLANDSHIRE. *Wheat*—None grown. *Barley*—None grown. *Oats*—Quantity of grain, per acre, about 40 bushels; seed, 5 to 6 bushels per acre. Quality of grain and straw better than last year. *Harvest* 8 days earlier. *Hay*— $1\frac{1}{2}$ tons per acre, ryegrass and clover; secured in better condition than previous year. *Meadow-hay*—More productive. *Potatoes*—Yield much the same as previous year; no disease; no new varieties planted. *Turnips*—About 2 tons per acre more than last year; crop braided well. *Weeds*—Not more injurious than usual. *Pastures*—Quite as good as last year. *Live Stock* thrived well; cattle and sheep free from disease. *Clip of wool*—Quality good; weight slightly under previous year.

CAITHNESS-SHIRE. *Wheat*—None grown. *Barley*—A good average crop, with well-matured grain, and well secured. The barley straw not being very suitable for fodder there is less ground devoted to bere or barley than to oats. *Oats*—Oats is the staple crop of Caithness, and this year the dry summer and continuous favourable weather brought a remunerative yield. From 5 to 6 bushels per acre were sown, and from 3 to 10 quarters would be the product, according to nature of soil. The quality of grain is exceptionally good, and over 40 lb. per bushel is a common weight for this year's crop. *Harvest*—The harvest began about the usual time, cutting being general in the second week of September. The weather was very favourable, and the ground being in fine trim after the extremely dry summer, binders did their work well. Weather continued favourable for ingathering, and the crop was secured in excellent condition, the last equally good with first—very different from 1912. *Hay*—The dry summer made hay crop stunted in some fields, but there would be an average crop of 2 to 3 tons, ryegrass and clover, with aftermath doing very well. *Meadow-hay*—Meadow hay crop was of average quantity and quality. *Potatoes*—The yield of potatoes was large and good; mealy potatoes were general. There would be about 7 tons of "Beauty of Hebron," "Fortyfolids," "British Queen," and "Abundance," but the "Champion" still keeps its place as a very serviceable potato. There was no disease to speak of. *Turnips*—The drought affected the turnip crop, and they drooped after being singled. They looked deficient in August, but showers revived them, and the favourable September, October, and November helped to form good-sized bulbs, where finger-and-toe had not set in, and over 30 tons per acre could be secured from the first sowing. No great damage done by insects, and "grub" was not at all general. *Weeds*—Spurry got up among the oats, and some grounds showed a profusion of corn marigold and thistles. Coltsfoot and skellock are difficult to eradicate. *Pastures*—Pastures, considering the dryness of the season, stood out fairly well, but animals were badly off for water, and springs and burns got dry. Water to drink had to be carted in some cases for miles for the stock on grass. *Live Stock*—Stock thrived very well, but there are lots of cows that have not proved in calf; some regard this as due to the dry season. Anthrax has decreased, and sheep scab is thought to be nearly or altogether eradicated in Caithness. *Clip of wool*—An average clip of wool.

ORKNEY. *Wheat*—None grown. *Barley-Bere*—Grain much better than

last year, the average yield being about 32 bushels per acre, weighing 49 lb. per bushel. Seed, $3\frac{1}{2}$ to $4\frac{1}{2}$ bushels. *Oats*—Oats were sown during the latter half of April and beginning of May. The weather was fine in May and June, with occasional showers, which gave the crops a good start, and notwithstanding the drought in summer, which was the driest remembered, there was a good crop of both straw and grain—a much better crop both in quantity and quality than last year. The average yield is about 36 bushels per acre, weighing 41 lb. per bushel. Seed, 4 to 6 bushels. *Harvest*—The harvest began about the middle of September, being about the usual time, but about a fortnight earlier than last year. It was finished about the end of October, and was the best for many years past. *Hay*—Hay was a fair crop, better than last year, and was secured in good order; weight about 25 cwt. per acre. *Potatoes*—Potatoes were an excellent crop; much better than last year; weight about $7\frac{1}{2}$ tons per acre. *Turnips*—Turnips were sown under excellent conditions, came quickly to the hoe, and were a good crop, fully as good as last year, the average weight being about 12 tons per acre. Very little damage was done by either insects or weeds. *Pastures*—Pastures were good most of the season, and stock thrived well, and were free from disease. *Clip of Wool*—The clip of wool was about an average.

SHEPHERD. *Wheat*—None grown. *Barley*—Very little grown; a good yield where tried. *Oats*—Above the average, but straw rather short owing to the dry summer. *Harvest*—3 weeks earlier. *Hay*—A lighter crop than last year. *Meadow-hay*—Much lighter. *Potatoes*—A very good crop, but tubers rather smaller than last year; no disease. *Turnips*—The first-sown turnips gave the best crop; the drought in June and July affected the last sown. Insects not more than usual. *Weeds*—Not more than usual. *Pastures* very short in most districts. *Live Stock* thrived fairly well. Cattle and sheep free from disease. *Clip of wool*—Under the average owing to the wet winter and spring.

THE WEATHER OF SCOTLAND IN 1913.

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THIS report consists of (1) a general description of the weather over the Scottish area from month to month; (2) a selection of rainfall returns, in which each county in Scotland is represented by one or more stations. It is to be noted that all the temperature readings referred to are, unless otherwise stated, from thermometers exposed in the regulation "Stevenson Screen."

JANUARY.

The year opened with a continuance of the mild south-westerly type of weather which had characterised December 1912, and the mean temperature for the first week or so was more than 4° above the normal in many districts. From 9th

onwards, with frequent winds from a south-easterly quarter, there was a good deal of cold weather, though there were no readings abnormally low for a winter month, the lowest being 6° at Drumlanrig on 14th, and 10° at Carrbridge on 26th. Highest readings occurred very generally on 7th or 8th, the actual maximum being 56° at Gordon Castle and at Inverness on 7th.

As regards rainfall, the distribution relatively to the normal was extremely irregular. Amounts were much above the average in the east, where here and there the month was the wettest of the year, but extremely dry in the north and north-west. Thus at Dunrobin precipitation was measurable on only five days, and the aggregate of rather less than half-an-inch represented only about one-fifth of the normal. Rather heavy falls occurred in the north-west during the first few days, but, generally speaking, the month's totals were largely accounted for on 11th and 12th, around 22nd, and from 28th onwards. Much of the precipitation consisted of snow, and on 11th "rainfall equivalents" of more than 1 inch were widely experienced, the two days' aggregate at Kettins for 11th and 12th exceeding 3 inches. On 23rd, Lerwick had fully 1 inch; on 28th, Crathes and Kettins about 1 inch; whilst on 30th and 31st very heavy falls of snow and rain were general—as much as 1·90 inches at Stronvar on 30th.

The weather was at times very stormy, and on 11th a very severe snowstorm set in generally, continuing without intermission in parts of Perthshire for practically two days, with serious drifting in many districts. Other less serious falls occurred on 20th and 23rd, with another general storm on 30th and 31st. On 31st a thunderstorm was somewhat widely experienced in west and north.

The month was decidedly cloudy, and a good deal of fog occurred in the Firth of Forth and in the extreme south-west.

FEBRUARY.

Barometric pressure was at first low and unsteady, and there was a continuance of the unsettled type of weather which had characterised January, with south-westerly winds, temperatures considerably above the normal, and highest readings for the month in many districts on 3rd, 7th, 11th, or 12th. During the latter half of the month conditions were, on the other hand, of a very settled character, and with winds frequently from some easterly point, moderately cold weather was experienced, with lowest readings, as a rule, between 19th and 23d. From 25th to 27th, however, temperature was again high, and in the south of Scotland, and here and there else-

where, highest readings were registered at that time. The extremes reported were 58° at Crathes on 25th, and 18° at Eskdalemuir on 23rd.

Here and there in east and north the month was the driest of the year, with some aggregates of less than 1 inch, and there was in most districts a well-defined shortage. Almost the entire rainfall of the month was registered during the first ten days, and towards the north-west during the first eight days, and some heavy falls occurred. Kinlochquoich, with a total for the month of 14.45 inches, had $3\frac{1}{2}$ inches on 3rd, and an aggregate of more than 8 inches for three consecutive days; Glencarron about $2\frac{1}{2}$ inches on 2nd; and Fort-William more than 1 inch on 1st, 2nd, and 6th. From 11th onwards almost rainless weather was experienced, except for some unimportant falls from 24th to 26th.

The first few days of the month were almost continuously stormy, with thunderstorms here and there on 1st, 2nd, and 6th, and a strong south-westerly gale on 7th and 8th. The severe snowstorm which had marked the closing days of January continued in many districts on 1st February, and for some days thereafter rain and melted snow caused widespread and destructive flooding.

Sunshine amounts were much below the normal.

MARCH.

During the first week or so a mild south-westerly type of weather prevailed, but thereafter there were various incursions of severe cold, with lowest readings almost everywhere on 18th and a minimum at Stronvar of 12° . During the last three days of the month there was a return to milder weather, and highest readings were very generally recorded at that time, with a maximum of 58° at Helensburgh, Dumbarton, and Paisley on 30th.

The barometer stood, as a rule, at an abnormally low level, and there were very considerable fluctuations of pressure. As regards rainfall, there was in general an abnormally large excess, and on Speyside and in the Border counties the month was the wettest of the year. At Perth it was the wettest March for at least fifty years, and at Poltalloch a wetter March has been recorded only in 1894, and at Greenock a wetter only in 1903. Some very large aggregates were reported,—as much as 17 inches in Achnacarry. In west and north-west precipitation occurred every day until 16th, and here and there every day until 23rd, with some heavy falls. At Kinlochquoich more than 1 inch fell on as many as seven days. On the other hand, during the first three weeks rainfall in the east was

quite moderate, whilst thereafter much fine weather was experienced in the west, though in the east some heavy falls, largely accounted for by snow and sleet, occurred with easterly winds on 22nd, 28th, and 29th.

The weather was at times of a very stormy character, especially from 4th to 6th, when a strong south-westerly gale was general; on 9th and 10th; in the north from 12th to 14th; between 17th and 20th, when the wind was at times from the north-east; and in the east on 22nd and 23rd, when an easterly gale was experienced. Early in the month considerable damage was caused by flooding.

Severe snowstorms occurred in various districts on 6th and 7th; between 15th and 18th; and in eastern districts on 22nd and 23rd. Considerable interruption to traffic was caused in the Highlands and Southern Uplands.

Thunderstorms in north and west between 4th and 7th; somewhat widely on 14th; and here and there on 15th, 16th, or 20th.

Sunshine amounts differed little from the normal. Fog occurred in the Sound of Mull from 10th to 16th; and a little in east and north during the last few days.

APRIL.

The most striking feature of the month as regards temperature was an incursion of severe cold on the 11th, associated with the passage over our islands in a southerly direction of a rather deep barometric depression. At Aberdeen and elsewhere, temperature on that day hardly rose above the freezing-point, and sharp frost occurred very generally on the following night, with a reading as low as 18° at Balmoral. Rather cold weather continued until about 22nd, with rather mild weather thereafter. Early in the month temperature fluctuations had been unimportant. The actual maximum recorded was 67° at Paisley on 8th.

The month was one of great extremes as regards rainfall. In the extreme north and round the fringe of the Moray Firth it was very dry, with less than 1 inch at Gordon Castle. Elsewhere there was an excess, and this was abnormally large in west and south. At Cargen, near Dumfries, the month's total of 6·02 inches was more than 1 inch above any other April rainfall during the last fifty years; at Poltalloch for a decidedly wetter April we must go back to 1867; and at Greenock a wetter April has occurred during the last forty years only in 1904. Even in wet districts, however, there were many rainless days, and but little rain fell anywhere from 3rd to 8th, and from 20th to 23rd. On 11th snow yielded fairly heavy "rain-

fall equivalents," whilst the wettest periods were from 15th to 18th and from 24th to 29th.

Except for gales or high winds about 6th, 15th, and very generally on 26th and 27th, wind force was, as a rule, moderate.

The month was somewhat cloudy, with coast fog at times, and on 11th a snowstorm of exceptional severity for the time of year was widely experienced.

On 17th a severe thunderstorm occurred in some eastern districts, with exceptionally heavy hail in East Lothian and elsewhere.

MAY.

For the first three weeks or so of May temperature was rather below the normal, except for a day or two about the middle of the month, but during the last week there was a decided recovery, and some fairly high readings were recorded both by day and by night. Lowest readings occurred here and there at the very beginning of the month, but as a rule about 16th or 20th, the actual minimum being 27° at Balmoral on 20th. Highest readings occurred in most districts on 30th, with a maximum of 75° at Glasgow and at Comlongon Castle (Ruthwell), but along part of the east coast the 16th was the warmest day of the month.

The month was remarkable for the abnormally heavy rainfalls which occurred over a great part of Perthshire and towards the north-east from 6th to 9th. On 6th, Ardvorlich on Loch Earn had $3\frac{1}{2}$ inches and Aberfeldy $2\frac{1}{2}$ inches, and on the 7th both these places fully 1 inch. On 8th, the focus of greatest intensity shifted toward the north-east, with $2\frac{1}{4}$ inches at Lednathie and about 2 inches at Crathes, on Deeside, and on 9th each of these places had about $2\frac{3}{4}$ inches. The four days' aggregate, from 6th to 9th, was about $7\frac{1}{2}$ inches at Lednathie and about $6\frac{1}{2}$ inches at Ardvorlich and Aberfeldy; there were many records of more than 1 inch on each of four consecutive days; and at Crathes a continuous rainfall of 36 hours gave a measurement of nearly $4\frac{1}{2}$ inches. These great rainfalls caused destructive flooding in Perthshire and Forfarshire, and the lower Tay rose to a height unprecedented for the month of May. It is noteworthy that the area of excessive rainfall had very definite northern and southern limits. Thus from 6th to 9th no rain fell at Inverness, Crieff had an aggregate for the four days of only 1.15 inches, and Perth itself hardly more than 2 inches. During the opening days of the month there had been considerable falls in west and south from 3rd to 5th, whilst from 10th onwards there were in the east many rainless days, with moderate falls about 22nd and on 30th, and elsewhere moderate falls between 17th and 22nd, with very large

amounts towards the north-west. In the northern half of Perthshire and in the inland counties of Aberdeen, Kincardine, and Forfar, the aggregates for the month were over considerable areas from twice to thrice the normal, Lednathie having as much as three and a half times the normal. By way of contrast, around the Moray Firth area there was a shortage, the total at Fortrose being only about half an inch. In west and south there was a large excess.

The heavy rains towards the north-east from 6th to 10th were the accompaniment of strong winds or gales from east and south-east, and the weather was again stormy between 15th and 19th.

The month was a decidedly cloudy one, with some coast fog. Thunderstorms occurred somewhat widely on 4th; about 10th, 11th, and 21st; and on the afternoon of 30th along the East Coast.

JUNE.

The rather mild weather which had marked the last week of May continued during the first two or three days of June, when decidedly cold weather for the time of year set in with a mean temperature for the second week below the normal in some districts by as much as 5°. About 16th there were one or two warm days, with highest readings in many districts at that time, but thereafter there was a recurrence of rather cold weather, which lasted in some western districts until the end of the month. In the east, however, and elsewhere, temperature was again high during the last three or four days. The extremes reported were 80° at Comlongon Castle (Ruthwell) on 16th, and 33° at Eskdalemuir on 2nd, and at Wick on 13th.

As regards rainfall, the month was one of great extremes. In some eastern districts there was a slight deficiency, but towards the north-west and in some northern and western districts a very large excess. Kinlochquoich had an aggregate of 10½ inches, Glencarron and Inverness more than twice the normal, and at Glencarron the month was the wettest June on record. From 4th to 10th conditions were extremely unsettled, with some extremely heavy falls in west and north on 7th, 8th, and 9th. On each of these days Glencarron had considerably more than 1 inch, whilst Kinlochquoich had about 2 inches on both 7th and 8th, and about 2½ inches on 9th. The heaviest general fall was on 9th, when Greenock had 1½ inches, and a considerable area in north-west more than 2 inches. From 13th to 17th practically no rain fell, but thereafter with rather frequent thunderstorms some heavy falls in short periods were somewhat widely experienced, especially on 18th, 19th, and 24th. The month ended with two or three rainless days.

Very stormy weather of a south-westerly type was experienced from about 6th to 10th, with serious flooding at this time in western and central districts.

Thunderstorms occurred here and there from 4th to 6th; in west and south on 17th; in east and north on 18th or 19th; and very widely, though apparently not in the north, on 24th. Serious flooding resulted from the accompanying rains at Buckie, Forres, and elsewhere in the Moray Firth area on the night of 18th; and in Lanarkshire on 24th.

Coast fog occurred somewhat widely between 16th and 24th, and around the Orkneys and Shetlands there were several days of practically continuous fog.

Sunshine amounts were in general below the normal, though slightly above it here and there in the east.

JULY.

The barometer stood at an unusually high level throughout almost the entire month, and conditions were of a very settled character. After the first three days or so, with frequent light winds from east and north, temperature was often appreciably below the normal, especially in the east, though some fairly warm days occurred. The extreme readings reported were 82° at Comlongon Castle (Ruthwell) on 27th, and 31° at Balmoral and Braemar on 24th.

There was in all districts a remarkable rainfall deficiency, and, speaking generally, a drier July has been experienced in Scotland during the last fifty years only in 1868 and 1878. A large part of the country had less than 1 inch; considerable areas only about half an inch; and not a few places, such as Fort William, Crieff, Edinburgh, and Dumfries, less than one-fifth of the normal. The total of half an inch at Stronvar was only about one-tenth of the normal, whilst at Braemar the trifling aggregate of one-quarter of an inch was the lowest July rainfall at that place for at least fifty years, and at Edinburgh during the last hundred years a smaller total for July than that of 0.46 inch has been recorded only in 1825 and 1868. The month's totals were largely accounted for about 6th, 13th, 16th, and 21st, but at Perth and elsewhere no rain fell after 13th, and at Edinburgh there were only two or three trifling falls after 6th. On 13th and 14th considerable falls were registered here and there in north and west with weather of a thunderstorm type. Perth had only 4 "rain days," Edinburgh only 5, and Dundee only 6.

In most districts sunshine amounts were above the normal, - but in the east below it. Coast fog occurred somewhat densely round the north from 1st to 3rd; and somewhat widely between 11th and 15th.

Thunderstorms were infrequent for a summer month, but occurred at a few places on 5th and 6th, and towards north-east and north on 14th.

AUGUST.

The barometer again stood at an unusually high level, and conditions remained of a very settled character until about 20th. The first three days were decidedly warm, and in several eastern and central districts, and at Cally (Gatehouse), in the south of Scotland, the thermometer reached 80° on one or more days. There then followed a week or so of rather cold weather, prolonged in northern districts for some considerable time, whilst towards the close of the month there was everywhere a well-defined temperature excess. The extreme readings reported were 84° at Smeaton on 3rd, and 31° at Braemar on 18th.

As in July, there was a remarkable rainfall shortage, and though the aggregates were, as a rule, less than those for the dry Augusts of 1899 and 1911, here and there, as at Perth and Braemar, the month was unprecedentedly dry. Only a few scattered stations had as much as one-half of their normal amounts; the fringe of the Moray Firth and some inland districts less than 1 inch; a great part of the country less than 1½ inches; whilst at Crieff the total of 0·70 inch represented less than one-fifth of the normal. There was no breakdown of the prolonged dry period until 20th, when a short wet spell, lasting in some districts until 25th, was more or less general. On 21st some heavy falls occurred in west and north,—fully 2 inches at Glenquoich,—and again from 23rd to 25th. Thereafter northern and western districts were rainless or all but so, whilst elsewhere rain fell on 29th and 30th, very heavily at places during thunderstorms, the aggregate for these two days at Smeaton and Kelso exceeding 1 inch. As illustrating the very dry conditions that prevailed over wide areas throughout July and August we may note, for example, that at Crieff the two months' aggregate was only 1·14 inches; that at Dumbarton no rain fell from 22nd July to 19th August; and that at Stronvar the total fall from 15th July to 19th August was only one-fifth of an inch. It may be noted that, as a consequence of the prolonged drought, the river Tay reached a record level, considerably below that of 1826—"the year of the short corn."

Thunder was reported in Aberdeenshire on 15th and 16th, and a thunderstorm of some severity occurred somewhat widely on 30th in eastern and northern districts and also in the extreme south-west.

Sunshine amounts were only here and there equal to the normal,—considerably below it at Edinburgh.

Coast fog was experienced somewhat densely in west between 15th and 16th; and in east and north from 28th to 30th.

SEPTEMBER.

During the first three weeks of the month, with winds, as a rule, from a north-easterly or easterly point, temperature was in general somewhat below the normal, with some decidedly cold days. About 7th and 17th several readings in screen below the freezing-point were reported, with a minimum of 27° at Kin-gussie on 7th when the thermometer at Braemar in the open fell to 21° . From 22nd or 23rd onwards, on the other hand, an extremely mild south-westerly type of weather prevailed, the mean for the fourth week being at many stations fully 6° above the normal. The highest reading was 75° at Comlongon Castle (Ruthwell) on 28th.

As regards rainfall, there was a slight excess in some northern districts, but, as a rule, a shortage which was very decided in some western districts, Fort William, for example, having little more than one-third of the normal. The first six days of the month were rainless in nearly all districts, and, though trifling falls were general on 8th, at Drumlanrig no rain fell until 12th. The month's totals were largely accounted for between 11th and 16th, when some very heavy falls occurred. On 11th Glen-quoich had 2 inches, and Fort William and Lochbuie more than 1 inch; on 13th Cawdor Castle, near Nairn, had nearly $1\frac{1}{2}$ inches, and Crathes, parts of the Edinburgh area, and Wolfelee fully 1 inch; on 15th considerable amounts were registered towards the north; and on 16th Montrose had nearly $1\frac{1}{2}$ inches. After 16th the only amounts of importance were registered between 22nd and 25th. At Cally (Gatehouse) the aggregate for 22nd and 23rd was nearly $1\frac{1}{2}$ inches, and amounts approaching 1 inch were registered at Crieff on 23rd and at Ardtornish on 25th.

The wet periods were the accompaniment of rather stormy weather, but the total wind movement was much below the normal.

The month was a decidedly cloudy one, and considerable amounts of fog and mist were experienced towards the end of the month.

Thunderstorms occurred somewhat widely in west and towards the north on the afternoon of 14th; at Crathes on 24th; and at Lerwick on 27th.

OCTOBER.

The month was an extremely mild one, though much less mild than October 1908. Temperature was at first somewhat

variable, with highest readings for the month at Strathpeffer and at some western stations on 1st, and lowest readings here and there on 9th and 10th. Thereafter with a preponderance of southerly winds conditions were mild or very mild, except for a touch of wintry weather, with northerly winds, on 23rd and 24th. On both these days the minimum thermometer at Eskdalemuir fell to 20°, that being the lowest reading reported during the month, whilst highest readings occurred in most districts on 17th or 19th, though the actual maximum was 68° at Strathpeffer on 1st.

Rainfall was much below the normal except in the extreme north-west. Gordon Castle had only about one-quarter and Dunrobin and Strathpeffer only one-third of their normals, whilst aggregates of less than 1 inch at Fortrose and Gordon Castle were in contrast with fully 10 inches at Glencarron and 14 inches at Kinlochquich. Rather wet weather was experienced in eastern districts between 4th and 8th, with nearly 1½ inches at Wolfelee on 7th. In many western districts, on the other hand, no rain fell until 12th, whilst on 13th a severe rainstorm affected all except some sheltered eastern districts, Kinlochquich registering nearly 2½ inches, Stronvar fully 2 inches, and many western stations more than 1 inch. During the latter half of the month rain was more or less general on 19th and 20th and from 27th to 29th, whilst towards the north-west there were several days with extremely heavy falls. Thus on 19th Ardtornish had fully 2 inches; on 20th Glencquich 1½ inches; on 24th Kinlochquich 3·90 inches, Glencarron 2·69 inches, and Fort William 1½ inches.

The weather was in general somewhat stormy about 13th, and in the north about 16th and from 20th to 23rd. On 23rd snow and hail occurred in some exposed districts.

Thunderstorms were experienced here and there in the west on 21st, and one of considerable severity somewhat widely in central, eastern, and south-eastern districts on the evening of 29th.

Sunshine amounts were, as a rule, slightly above the normal, though here and there hardly equal to it.

NOVEMBER.

With the barometer almost continuously at a low level and a large excess of south-westerly winds the month was almost uniformly mild, especially during the last week, and on the whole a milder November has been experienced in Scotland during the last fifty years only in 1894, 1897, and 1899. At Edinburgh (Blackford Hill), Oban, Dunrobin, and a few other stations the thermometer in screen did not fall to the freezing-point, but in most districts there was a touch of cold from 6th

to 8th, and again about 22nd. The extreme readings reported were 61° at Crathes on 27th, and 22° at Braemar, Balmoral, and Logie Coldstone on 6th.

The month was decidedly dry in the east, but in the west aggregates were much above the normal, and in the north-west there was an abnormally large excess, Glencarron having fully twice the average amount for November. The totals ranged from less than 1 inch at Crathes up to 18 inches at Glencarron, 23 inches at Glenquoich, and 29 inches at Kinlochquoich. In the West Highlands the month was the wettest November on record, and at Glenquoich during the last forty years a heavier rainfall has been recorded in any single month only in the Decembers of 1898 and 1912. As regards daily distribution, there were in the east no very heavy falls and many rainless or all but rainless days. At Edinburgh and elsewhere the month's totals were largely accounted for on two or three days, and at Crathes, on Deeside, the 2nd was the only day with more than one-tenth of an inch. Elsewhere wet weather was in general experienced from 1st to 5th, from 10th to 20th, and in west and north-west from 24th onwards. Towards the north-west there were some extremely heavy falls, especially on 2nd, from 15th to 20th, and from 24th to 29th. Thus Kinlochquoich had 3 inches or more on 2nd, 19th, and 28th; more than 2½ inches on 16th and 29th; and amounts exceeding 1 inch on six other days; and Glencarron more than 2 inches on 19th and 28th, and more than 1 inch on four other days.

Much windy weather was experienced, with gales at times,—very widely from 17th to 19th and towards the end of the month. No snowfalls of importance occurred.

Thunderstorms occurred in some western districts on 15th and 16th, and here and there on 18th and 30th.

Sunshine amounts were, as a rule, fully equal to the normal, but slightly deficient in the Hebrides and Orkneys. Between 8th and 15th coast fog occurred in the east.

DECEMBER.

The mild weather of November continued during the first three or four days of December, but from 5th to 7th temperature was extremely low, with the minimum for the month in many districts on 6th. On that date the maximum at several stations failed to reach 30°, and at Braemar was as low as 23°, the minimum in screen there falling to 5°, with a reading from an exposed thermometer of 1° below zero. At Carrbridge even lower readings occurred, and the minimum in screen fell to 1° above zero. There was a very rapid recovery from this short spell of acute cold, with generally mild weather until about 25th, followed by another interruption of cold, with winds from

north-west, and lowest readings for the month in many districts on 31st, when the minimum at Braemar was as low as 4°. The highest reading reported was 58° at Smeaton on 9th and at Poltalloch on 10th and 11th.

As regards rainfall, there was in eastern and most central and southern districts a decided shortage, Dundee, Perth, and Crieff having less than half the normal, but in the north there was an excess, and here and there in the west amounts were practically equal to the normal or slightly above it. On 2nd heavy falls occurred in west and north-west,—more than 2 inches at Kinlochquoich; and on 3rd a severe rainstorm was general, with falls exceeding 1 inch at places as far apart as Poltalloch, Kilmarnock, Cargen, and Colinsburgh. There followed a long spell of almost rainless weather in the east, whilst from 8th to 15th conditions were extremely unsettled towards the north-west and rather so in west, with as many as six days at Kinlochquoich during that period, with falls of more than 1 inch and as many as 3 inches on 15th. Considerable falls again occurred in west and north-west from 22nd to 28th, with very large amounts on 25th, whilst from 25th to 27th or 28th there were in many districts considerable "rainfall equivalents" derived from melted snow.

The weather was at times stormy, and from 4th to 7th and during the last few days of the month of a very wintry character, with widespread snowstorms of considerable severity.

Thunderstorms occurred here and there in the west on 27th.

Sunshine amounts were deficient in the north, north-west, and south-east, but elsewhere equal to the normal. Hardly any coast fog was reported.

General Note.

The outstanding feature of the year was perhaps the long-continued spell of dry weather in summer. Here and there towards the north-west and in the extreme south the year's rainfall was slightly above the normal, but in eastern districts there was a very decided shortage, whilst the aggregates at Gordon Castle and at Grantown-on-Spey were below the average of the forty-year period, 1871-1910, by as much as 28 per cent. These places defined a region of abnormally deficient rainfall in the Lower Spey Valley, and at both the year was the driest on record, though at Gordon Castle 1884 was almost as dry, and at Grantown 1904 was only slightly less dry. The great rains towards the north-east from May 6th to 9th were of remarkable intensity for that region, and it is noteworthy that whilst they resulted in flood levels of the Tay and other rivers unprecedentedly high for a spring month there were experienced some three months later summer river levels below even those of the historic year of 1826.

RAINFALL RECORDS FOR 1913 IN INCHES.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Shetland—Lerwick	4.98	8.04	5.50	2.54	2.75	1.66	.36	1.26	2.09	2.95	7.04	5.66	39.83
Orkney—Deerness	1.91	1.78	2.72	1.88	1.50	2.69	.65	1.30	1.98	2.53	5.85	4.50	28.79
Caithness—Wick	1.32	1.16	8.18	1.43	1.70	2.04	.65	1.31	2.92	1.94	8.10	8.51	34.56
Sutherland—Dunrobin	.48	1.52	2.35	2.00	2.07	8.20	1.32	1.19	2.88	1.04	4.00	4.27	26.32
Bettyhill	1.29	2.43	8.59	1.76	1.97	2.35	.98	.75	2.43	1.80	5.81	5.82	30.46
Ross and Cromarty—													
Portrose	.43	1.50	2.25	.94	.52	2.78	.90	.61	1.64	.97	2.71	2.97	18.22
Strathpeffer	.98	2.28	2.87	1.64	1.56	3.14	1.13	.85	1.87	1.03	8.80	4.68	25.63
Glencarron	4.47	7.09	6.61	5.54	6.37	8.68	1.85	3.29	3.35	10.07	18.40	12.61	87.23
Stornoway	3.50	8.39	6.52	8.47	3.32	3.58	.86	1.63	2.46	6.32	6.66	5.25	46.99
Inverness—Inverness	1.42	1.96	2.77	1.36	.87	4.29	1.19	.91	2.65	1.09	2.61	8.21	24.33
Kingussie	1.32	8.99	5.16	1.69	2.06	2.02	.84	1.16	1.83	1.50	8.41	8.90	29.08
Drumnadrochit	2.47	8.62	5.46	2.07	1.42	3.62	1.78	.99	2.20	2.23	4.56	4.41	34.73
Kinlochquich	9.76	14.45	15.30	9.28	8.62	10.40	1.80	3.97	4.88	14.36	29.34	20.70	142.45
Fort William	6.41	7.43	12.17	5.42	5.37	6.73	.90	2.59	2.69	6.55	14.88	9.54	80.18
Nairn—Nairn (Delnies)	.72	2.23	2.46	1.18	1.17	2.86	1.11	.76	2.90	1.80	2.12	2.95	21.76
Elgin—Gordon Castle	1.10	1.12	2.75	.87	2.71	2.37	.67	.80	3.46	.86	1.81	8.43	22.04
Banff—Craigellachie	1.50	1.13	3.72	1.20	2.55	1.92	.76	1.12	1.16	.94	1.53	3.75	23.28
Aberdeen—Fyvie Castle	2.86	.98	2.88	1.58	4.36	2.76	1.00	2.87	3.41	1.02	1.63	8.72	28.27
Peterhead	1.87	.58	2.18	1.63	2.16	1.46	.70	.79	2.31	1.54	2.19	8.76	21.12
Aberdeen (King's Coll.)	2.84	.76	8.09	2.79	3.10	1.36	1.10	1.41	2.10	1.55	1.76	1.95	29.75
Balmoral	4.41	1.20	5.45	2.62	3.58	1.79	1.03	1.10	3.06	1.96	1.94	2.97	31.20
Kincairdine (The Burn)	4.08	1.07	6.37	3.37	5.36	2.74	.67	1.88	3.69	2.35	1.94	1.49	84.81
Forfar—Montrose	4.20	.84	8.31	2.88	3.62	2.07	1.27	1.40	3.18	1.61	1.37	1.41	27.04
Dundee	3.48	.66	3.58	1.96	3.55	1.27	.60	1.37	2.21	1.53	1.79	1.29	28.28
Forfar	3.94	1.03	6.03	2.84	5.81	2.06	.27	1.85	2.84	1.78	1.71	.83	31.62
Pearse	5.84	1.42	5.24	2.95	6.00	3.70	.40	1.51	3.58	2.45	2.61	1.81	37.81
Perth—Perth	5.04	.95	5.04	2.22	2.75	2.02	.70	.83	1.84	1.53	2.18	1.22	20.32
Crief	5.81	3.42	7.27	3.46	2.66	2.35	.44	.70	3.15	2.61	4.31	1.99	38.17
Stronvar	8.32	6.69	10.66	7.16	6.64	5.21	.50	1.48	4.91	6.33	10.66	6.52	74.98
Leary	5.50	6.00	11.00	4.00	5.00	3.90	.30	1.50	2.30	8.50	9.00	4.80	56.80
Aberfoyle	6.56	5.40	9.95	5.20	4.20	4.70	.95	1.70	3.75	8.80	9.25	4.60	63.65
Fife—St Andrews	3.95	.86	5.61	2.25	3.85	1.84	.76	1.65	2.02	1.77	2.11	1.98	25.69
Kinross—Loch Leven	3.43	1.93	5.61	2.77	8.18	2.43	.68	1.36	1.97	1.92	3.41	2.13	30.72
Clackmannan—Alloa	3.83	2.43	4.60	2.79	2.61	2.85	.90	.99	2.40	2.19	4.55	2.80	32.34
Argyll—													
Lochbuie (Mull)	7.88	6.74	11.13	6.55	6.62	5.98	1.63	4.36	3.44	6.80	18.93	10.88	85.84
Oban	5.37	5.00	7.25	4.03	3.67	8.91	1.09	1.66	2.01	4.41	8.12	5.13	51.65
Glen Etive	7.18	11.61	18.74	7.64	8.76	9.24	.84	8.91	4.02	7.99	17.50	14.02	106.45
Inveraray	5.62	5.73	9.85	4.83	6.32	5.53	1.50	3.35	3.25	5.32	12.19	9.11	72.50
Campbeltown	5.48	2.26	4.38	4.76	4.08	2.77	1.38	1.55	2.80	4.96	6.79	8.77	44.88
Bute—Rothesay	8.81	8.27	6.48	4.45	4.02	8.37	1.71	2.14	2.59	3.86	7.19	5.08	49.42
Stirling—Buchlyvie	5.53	3.70	6.82	3.32	3.21	8.92	1.11	1.76	2.23	2.36	6.00	3.33	43.69
Falkirk	4.27	2.68	4.28	2.81	2.29	2.41	1.20	1.08	2.78	1.99	5.25	3.82	34.24
Dumbarton—Dumbarton	6.08	3.65	6.67	3.85	5.08	8.01	1.01	.96	2.10	4.39	6.38	2.90	43.98
Renfrew—Greenock	7.42	5.10	8.86	5.90	4.97	5.10	1.61	1.80	2.68	4.20	7.97	5.52	61.13
Paisley	4.86	8.74	5.85	3.98	3.45	3.58	1.56	1.32	2.32	2.41	6.46	4.48	48.91
Ayr—													
Kilmarnock (Ag. Col.)	3.01	1.92	3.72	2.35	2.81	2.65	1.48	1.52	2.42	1.91	4.88	4.90	38.57
Ayr (Doonholm)	3.32	2.55	3.93	2.82	3.07	3.03	.86	1.32	2.38	2.35	6.64	5.42	37.69
Knockdon	2.88	2.00	4.40	2.63	3.00	2.48	.68	1.00	2.58	2.10	5.76	4.38	32.89
Pinmore	6.12	2.21	3.77	4.49	3.95	2.91	.75	1.92	1.16	3.16	7.73	5.68	46.85
Lanark—													
Glasgow (Observatory)	3.51	2.88	3.91	2.84	3.37	3.00	1.29	1.05	2.28	1.73	5.31	3.38	34.55
Airdrie	2.67	2.26	4.38	2.93	3.16	2.33	1.19	1.74	2.33	1.93	4.75	3.80	39.47
Leadhills	7.49	4.32	7.94	8.07	6.26	4.16	.87	1.35	2.88	4.34	7.10	3.65	58.43
Dungavel	2.94	8.41	6.18	2.96	3.53	3.68	1.54	1.38	2.36	3.01	6.54	5.90	48.43
Lillichgow—Boghead	2.63	2.43	5.25	2.81	2.12	2.67	1.43	.95	2.21	2.93	4.69	4.90	38.91
Mid-Lothian—													
Edinburgh (University)	2.45	1.03	2.80	2.02	1.46	1.33	.51	1.86	2.90	1.54	1.92	1.65	20.87
Cockburn Hill (Balerno)	2.97	1.97	6.26	3.07	2.11	2.09	.67	1.17	2.88	2.77	8.35	2.69	81.50
Haddington—													
Dunolly Reservoir	4.73	1.24	3.69	2.23	3.87	1.52	.59	1.67	2.58	8.40	1.76	2.81	29.58
Gullane	1.85	.64	2.81	1.68	1.86	1.86	.67	1.78	2.14	1.41	1.87	1.69	19.09
Berwick—Marchmont	8.11	1.13	8.34	2.55	2.48	2.80	.79	1.66	1.93	2.09	1.95	2.45	26.87
Peebles—Peebles	8.90	2.10	5.28	3.98	8.04	1.74	.38	1.58	2.31	2.28	8.16	8.88	32.08
Seikirk—													
Fairlie, Clovenfords	3.22	1.55	4.37	3.70	3.42	1.28	.98	1.65	2.22	3.28	2.18	2.01	29.76
Roxburgh—St Boswells	2.31	1.12	3.08	2.99	2.31	2.18	.52	1.95	2.00	2.88	1.60	1.80	24.80
Braxholme	8.50	2.01	4.69	8.71	2.74	1.71	1.09	1.33	2.15	8.52	2.68	2.41	81.74
Dumfries—Dumfries	4.11	1.85	3.40	4.15	4.07	2.55	.57	1.16	2.80	3.08	4.14	1.77	37.15
Drumlanrig	5.59	3.71	6.14	5.10	5.50	3.13	.71	1.25	3.27	3.06	6.27	4.22	47.04
Kinneilhead (Beattock)	5.05	5.60	8.81	7.32	4.43	3.97	.88	1.87	2.59	5.27	8.07	5.38	58.67
Langholm (Ewes School)	5.94	3.52	5.97	6.07	8.75	2.97	.95	2.20	2.90	5.90	6.25	8.15	48.79
Kirkcudbright—Cargen	6.19	8.02	5.77	6.02	4.88	3.16	.58	1.65	8.00	8.87	5.82	8.37	47.88
Dalbeattie (Kirkennan)	6.98	8.08	5.46	4.37	4.52	3.66	.98	2.34	3.22	8.12	5.20	8.17	46.05
Dalry (Old Garroch)	8.89	8.68	6.77	5.50	5.67	4.41	.91	2.20	4.09	4.85	10.21	7.46	65.44
Wigtown—Galloway House	4.96	1.79	4.89	2.73	2.56	1.60	.89	1.37	8.07	2.84	4.60	8.08	38.88

TABLE No. 2.—TOTAL PRODUCE OF WHEAT, BARLEY, AND OATS, AVERAGE AND YIELD per Acre in the Year 1912, compared with the YIELD for the Years 1911 and 1910, and the AVERAGE of the Ten Years, 1902-1911, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.				BARLEY, INCLUDING BEER.				OATS.			
	Total Produce in 1912.	Acreage in 1912.	Yield per acre.			Total Produce in 1912.	Acreage in 1912.	Yield per acre.			Total Produce in 1912.	Acreage in 1912.
			Average of 1902-1911.					Average of 1902-1911.				
			1912.	1911.	1910.			1912.	1911.	1910.		
Aberdeen	Qrs. 21	5	33.89	30.89	32.92	Qrs. 91,357	20,849	Bush. 35.49	33.10	33.10	Qrs. 386,656	190,042
Argyll	†	5	†	40.00	40.00	6,611	1,385	Bush. 32.43	32.43	32.43	Bush. 37.32	37.32
Ayr	5,522	996	44.86	45.41	43.22	8,648	7,273	Bush. 37.38	35.10	35.10	Bush. 34.97	34.97
Banff	†	1	†	36.74	38.97	27,352	20,270	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Berwick	7,417	1,615	36.74	38.97	38.45	81,771	20,270	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Bute	114	23	50.09	44.73	48.00	1,169	35	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Caithness	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Clackmannan	2,431	434	44.80	46.53	44.82	2,758	833	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Dumfriesshire	3,946	719	37.24	39.06	34.01	1,364	270	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Dumfries	402	83	38.76	40.86	39.43	3,633	750	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Edinburgh	34,084	6,668	43.29	43.19	43.19	37,816	5,345	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Elgin or Moray	3,143	677	37.15	43.66	40.83	47,431	10,754	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Fife	55,780	12,905	34.55	41.51	31.82	95,137	18,924	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Forfar	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Glasgow	11,458	11,458	37.15	40.85	36.35	123,165	23,531	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Haddington	546	6,256	41.50	43.33	39.60	55,135	13,473	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Inverness	5,108	1,139	32.57	39.04	35.76	52,298	11,916	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Kincardine	666	1,120	44.80	46.39	44.89	1,770	380	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Kinross	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Kirkcubright	161	3,173	36.90	38.73	34.97	1,699	371	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Leven	10,051	2,179	36.90	38.73	33.00	8,996	201	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Lindisgow	12,524	2,639	38.11	45.25	38.17	10,887	2,069	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Nairn	313	76	30.00	32.00	32.00	9,906	2,789	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Orkney	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Peabes	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Perth	35,997	7,592	37.93	42.26	36.40	1,483	8,371	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Renfrew	10,456	1,988	42.08	42.55	39.36	1,186	41	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Roos and Cromarty	10,145	2,038	39.82	42.55	39.73	37,890	9,911	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Roxburgh	2,190	513	33.13	32.97	32.97	30,499	12,082	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Selkirk	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Shetland	80	30	52.00	33.00	30.00	1,070	278	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Stirling	10,713	1,932	45.01	45.16	44.43	2,779	1,035	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Southland	†	†	†	†	†	†	†	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Wigtown	731	152	38.49	39.37	36.41	2,113	763	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97
Total	299,448	62,378	38.41	42.53	37.10	892,486	191,670	Bush. 39.09	32.42	32.42	Bush. 48.03	47.97

Average of 7 years only. † Crop failed. ‡ Average for 6 years. § Exclusive of 8 acres in the County of Argyll which were grown for straw.

TABLE No. 8.—TOTAL PRODUCE OF BEANS, PEAS, AND POTATOES, ACREAGE AND YIELD PER ACRE in the Year 1912, compared with the YIELD for the Years 1911 and 1910, and the AVERAGE of the Ten Years, 1902-1911, in each COUNTY OF SCOTLAND.

COUNTY.	BEANS.					PEAS.					POTATOES.				
	Total Produce in 1912.	Acreage in 1912.†	Yield per acre.			Total Produce in 1912.	Acreage in 1912.‡	Yield per acre.			Total Produce in 1912.	Acreage in 1912.	Yield per acre.		
			1912.	1911.	1910.			1912.	1911.	1910.			1912.	1911.	1910.
	Qrs.	Acs.	Bush.	Bush.	Bush.	Qrs.	Acs.	Bush.	Bush.	Bush.	Tons.	Acs.	Tons.	Tons.	Average of the Ten Years, 1902-1911.
Aberdeen	178	67	21.16	26.00	23.24	188	95	15.83	20.44	16.19	41,310	7,592	6.55	6.12	5.40
Argyll	151	52	22.15	24.10	24.02	37	13	22.21	..	..	7,592	3,687	5.57	5.96	5.25
Ayr	6,199	1,355	27.09	36.10	40.12	30	7	22.21	..	..	84,660	8,853	9.06	9.88	8.63
Bang	2,998	1,103	28.86	33.19	31.07	39	17	34.04	30.88	22.86	8,853	1,960	4.53	7.06	7.16
Berkirk	2,928	676	24.65	24.91	26.09	39	..	25.81	25.00	25.56	19,028	8,320	6.73	7.14	6.68
Bute	134	45	23.53	24.00	25.37	12	4	22.88	24.50	34.40	5,948	981	6.06	7.25	6.44
Caitness	..	..	..	..	..	..	..	..	..	..	4,948	1,569	3.15	5.61	5.18
Clackmannan	1,723	332	41.53	32.69	48.71	4	1	32.00	..	40.00	2,935	456	6.44	7.71	8.10
Dumfries	253	71	28.43	26.84	32.91	..	..	..	30.14	30.50	17,531	2,348	7.48	9.28	7.55
Dumfriesshire	96	22	36.00	28.67	31.57	..	..	..	..	28.00	24,930	3,873	6.44	6.59	6.48
Edinburgh	67	17	31.53	29.21	33.00	523	116	36.05	33.87	34.48	53,148	7,252	7.33	7.30	8.00
Elgin or Moray	108	31	27.37	32.00	33.96	44	16	32.22	31.31	25.36	11,993	1,971	6.08	6.32	6.07
Fife	2,371	745	36.30	31.31	39.46	76	19	32.05	24.08	27.45	17,739	5,37	5.37	5.82	4.71
Forfar	453	114	31.78	32.04	33.05	48	12	32.00	32.63	31.50	125,391	18,166	6.90	7.40	6.68
Haddington	1,060	237	37.33	29.00	34.93	659	137	32.67	25.90	31.83	66,517	9,312	7.14	7.47	6.96
Inverness	33	8	35.25	27.00	25.67	49	16	24.69	23.83	27.00	19,983	5,726	3.49	3.55	3.81
Kinross	413	100	33.04	33.92	33.23	203	54	30.31	31.44	29.04	23,032	4,101	5.62	6.01	5.44
Kirkcaldy	84	7	38.86	30.00	44.00	..	..	..	..	..	5,921	915	6.47	7.76	7.08
Kirkcaldy & Bright	113	24	37.67	36.04	37.36	5	1	27.00	25.00	25.00	10,096	1,716	5.88	6.34	6.12
Leven	863	216	32.00	29.56	31.79	24	7	27.04	21.22	20.71	37,791	5,410	6.99	8.21	7.63
Linlithgow	628	137	36.71	26.45	36.07	51	12	33.95	25.00	34.00	19,395	2,564	7.56	8.23	7.95
Nairn	..	..	..	..	..	15	5	33.78	26.00	30.00	1,568	328	4.78	5.00	4.00
Orkney	..	..	..	..	..	..	..	..	..	..	9,506	2,694	3.53	5.26	4.07
Perth	28	5	36.67	24.00	..	..	..	..	..	..	2,818	418	6.83	6.60	7.53
Peebles	4,463	1,380	25.87	27.62	34.80	11	5	16.80	16.00	18.53	112,907	16,441	6.87	7.54	7.06
Perthshire	561	111	40.39	34.12	40.92	..	..	..	..	..	29,338	2,938	7.52	9.18	7.02
Ross and Cromarty	27	6	36.90	35.91	35.03	15	15	25.47	25.00	25.61	28,238	6,766	4.1	4.52	4.00
Roxburgh	894	223	28.29	28.08	33.74	108	28	30.71	29.00	29.00	7,568	1,484	5.10	5.56	6.31
Salisbury	15	4	..	..	..	..	..	..	..	..	1,144	246	4.65	5.55	4.86
Shetland	..	..	..	..	..	..	..	..	..	..	11,759	2,795	4.21	5.59	4.09
Stirling	10,920	2,134	40.94	40.44	44.93	126	31	32.45	37.25	37.00	24,459	3,455	7.11	8.61	7.14
Sutherland	2	1	14.00	17.00	..	3	1	22.00	..	..	6,489	1,409	4.61	5.17	4.90
Wigtown	1,042	199	41.87	42.86	44.68	..	..	..	..	..	9,230	1,293	7.14	8.38	6.25
Total	37,089	8,421	33.06	33.06	39.14	2,905	613	32.78	25.97	29.83	988,593	149,768	6.27	6.84	6.42

* Average of 6 years only. † Exclusive of 567 acres, the produce of which was cut or picked green. ‡ Average of 9 years only. § Average for 7 years. ¶ Exclusive of 571 acres, the produce of which was cut or picked green.

TABLE No. 4.—TOTAL PRODUCE OF TURNIPS (including SWEDS) and MANGELS, ACREAGE and YIELD per Acre in the Year 1912, compared with the YIELD for the Years 1911 and 1910, and the AVERAGE of the Ten Years, 1902-1911, in each COUNTY of SCOTLAND.

COUNTIES.	TURNIPS AND SWEDS.					MANGELS.						
	Total Produce in 1912.	Acreage in 1912.	Yield per Acre.			Average of the Ten Years, 1902-1911.	Total Produce in 1912.	Acreage in 1912.	Yield per Acre.			Average of the Ten Years, 1902-1911.
			1912.	1911.	1910.				1912.	1911.	1910.	
Tons.	Acrea.	Tons.	Tons.	Tons.	Tons.	Acrea.	Tons.	Tons.	Tons.	Tons.		
Aberdeen	1,373,358	96,683	15.84	13.17	18.05	453	40	10.85	13.52	12.33		
Argyll	89,208	5,791	16.23	14.38	17.03	13,512	45	12.02	13.18	12.33		
Ayr	151,419	7,313	20.99	19.87	22.30	14,475	619	21.68	23.08	20.09		
Banff	218,994	11,343	19.33	14.79	18.50	17,439	57	10.47	9.50	8.10		
Berwick	502,454	25,481	19.72	18.85	24.45	5,897	344	15.51	16.16	18.78		
Bute	22,039	1,379	17.22	16.27	16.63	5,835	17	16.41	14.80	16.32		
Caithness	205,905	13,672	16.25	19.07	17.69	279	..	..	..	..
Clackmannan	11,379	775	16.33	13.03	16.83	16	2	8.00	8.00	9.29		
Dumfries	30,411	1,423	21.37	19.23	21.16	16	15	17.90	20.67	16.94		
Dumfriesshire	243,225	17,356	14.01	14.11	17.70	267	15	14.29	16.80	16.13		
Edinburgh	190,256	10,226	18.61	13.70	22.01	5,137	363	20.72	17.81	21.04		
Elgin or Moray	269,473	14,750	18.27	14.24	18.31	1,264	61	19.15	16.75	17.13		
Fife	368,276	22,575	16.31	11.21	16.85	249	13	9.96	8.04	10.83		
Forfar	697,030	31,820	21.91	15.07	20.99	488	49	21.95	21.83	18.74		
Haddington	302,980	14,483	20.91	13.82	20.33	1,104	20	10.86	13.84	18.38		
Inverness	148,371	10,379	14.29	11.65	13.51	439	257	12.45	12.00	12.00		
Kinross	245,080	16,447	14.90	12.82	14.73	269	20	12.83	12.47	12.00		
Kirkcaldy	41,382	2,464	16.79	14.84	16.89	190	12	12.83	12.00	12.00		
Kirkcubright	174,870	11,420	15.31	14.39	19.33	6	1	16.41	19.50	19.53		
Leamark	199,408	9,871	20.20	17.35	18.23	2,133	130	8.43	8.06	9.93		
Linlithgow	65,255	3,885	16.28	15.46	20.68	378	44	23.29	20.75	17.48		
Nairn	61,590	3,998	15.44	12.00	14.00	163	7	14.09	14.00	15.32		
Orkney	165,457	14,161	10.98	10.93	9.47	185	..	..	..	..
Perth	78,432	3,685	21.38	12.47	21.75	..	..	..	18.67	19.00
Perthshire	517,788	26,424	19.59	15.08	18.64	446	29	15.38	18.65	18.09		
Renfrew	42,173	2,109	20.00	17.86	18.11	560	30	14.87	15.86	14.12		
Ross and Cromarty	243,894	15,451	15.78	12.93	14.94	1,066	67	16.92	17.57	15.53		
Roxburgh	285,188	20,474	14.42	14.01	19.51	1,368	87	15.92	14.75	15.46		
Selkirk	29,232	2,556	11.44	12.12	17.27	1,368	4	12.00	15.00	14.17		
Shetland	16,742	1,865	12.37	11.04	11.19	48	8	12.00	15.00	16.00		
Stirling	109,150	4,063	28.73	24.66	23.27	484	19	25.47	25.55	18.12		
Subtotal	46,898	2,047	15.39	14.31	16.22	484	19	10.00	10.00	18.12		
Wigtown	244,871	14,408	17.00	15.45	20.26	8,570	456	18.79	24.50	19.66		
Total	7,890,878	439,592	16.81	14.25	18.45	49,878	2,832	17.50	19.20	18.57		

* Average of 7 years only.

† Average of 6 years only.

‡ Average of 9 years only.

TABLE NO. 5.—TOTAL PRODUCE OF HAY from Rye-grass and other Rotation Grasses and Clover, also Total from Permanent Grass, AVERAGE, and YIELD per Acre in the Year 1912, compared with the YIELD for the Years 1911 and 1910, and the AVERAGE of the Ten Years, 1902-1911, in each COUNTY of SCOTLAND.

COUNTIES.	FROM CLOVER, SAINFOIN, AND GRASS.					FROM PERMANENT GRASSES.				
	Total Produce in 1912.	Acres.	Yield per Acre.			Total Produce in 1912.	Acres.	Yield per Acre.		
			1912.	1911.	1910.			1912.	1911.	1910.
			Cwts.	Cwts.	Cwts.			Cwts.	Cwts.	Cwts.
			Average of the Ten Years, 1902-1911.					Average of the Ten Years, 1902-1911.		
			Tons.	Cwts.	Tons.			Tons.	Cwts.	Tons.
Aberdeen	67,016	48,909	27.40	30.09	27.99	3,787	3,592	21.09	21.12	18.46
Argyll	16,613	10,976	30.27	26.62	28.94	28,565	16,649	34.31	31.86	31.85
Ayr	51,624	33,125	31.17	28.23	32.42	45,869	20,625	44.50	41.75	42.32
Banff	18,044	10,143	31.64	26.26	28.97	1,240	966	15.58	14.19	16.84
Berwick	15,565	10,741	34.57	31.93	34.52	2,749	2,186	25.78	26.85	26.48
Bute	4,085	3,318	35.34	34.51	35.48	1,556	679	33.98	33.29	32.65
Caithness	7,522	9,166	16.41	18.56	17.36	1,983	2,038	9.69	11.02	10.47
Clackmannan	4,241	2,135	39.73	44.16	40.87	1,529	959	32.57	32.49	32.88
Dumfries	11,866	6,795	34.92	36.52	31.90	8,404	1,925	35.37	33.33	34.48
Dumfriesshire	23,697	19,698	24.06	19.27	22.32	28,651	20,808	28.22	21.25	18.85
Edinburgh	30,072	18,639	44.10	51.89	66.40	5,204	3,086	33.73	25.41	25.51
Elgin or Moray	9,717	5,702	34.75	30.45	33.03	5,154	437	25.85	25.31	26.52
Fife	48,727	28,045	34.58	34.58	34.01	7,537	5,434	27.98	24.50	26.25
Forfar	29,813	21,644	27.09	33.40	35.25	2,953	2,284	20.65	22.84	18.90
Glasgow	24,881	11,018	44.30	48.93	61.50	2,959	1,401	32.82	23.58	32.28
Inverness	17,190	10,984	20.37	20.37	21.57	2,687	7,283	16.72	17.77	18.79
Kirkcaldie	17,621	12,825	26.43	27.91	23.83	6,352	385	12.78	11.75	12.81
Kirkcubright	3,247	3,072	34.16	31.35	33.80	1,320	900	29.34	25.84	30.41
Kilmarnock	14,593	10,516	27.68	22.08	22.68	18,176	13,036	27.89	23.26	23.53
Kilmory	35,941	20,811	33.38	30.93	32.80	23,440	14,486	32.86	29.17	28.83
Kinross	15,746	7,824	39.74	41.49	31.95	1,350	750	24.15	20.18	25.17
Leithgow	1,524	1,016	18.66	18.34	20.00	205	273	14.39	14.76	15.02
Leven	8,852	9,718	18.22	20.29	18.71	267	832	8.44	7.92	19.59
Orkney	4,102	2,521	32.54	34.69	35.72	2,428	1,891	34.90	24.55	31.66
Perth	45,004	33,688	26.80	27.27	27.46	16,632	18,325	24.06	18.29	23.87
Renfrew	24,768	18,175	37.60	39.88	38.01	9,376	5,715	52.31	38.01	40.37
Ross and Cromarty	15,873	18,146	24.15	20.10	18.54	2,500	2,775	18.02	11.88	9.92
Roxborough	14,219	8,917	31.39	26.49	30.98	8,564	6,360	28.93	21.00	23.98
Selkirk	1,905	1,152	33.07	23.70	22.51	2,854	2,068	28.57	18.54	17.15
Shetland	1,041	10,671	19.52	25.46	18.94	1,499	1,499	18.50	18.58	14.48
Stirling	25,602	14,177	36.12	36.77	28.92	9,312	5,311	33.06	30.91	29.63
Strathclyde	3,568	4,000	17.84	16.37	18.38	1,473	1,823	15.17	15.17	15.46
Wigtown	10,875	5,229	41.05	25.98	33.19	7,824	5,111	30.62	21.00	26.43
Total	644,156	423,592	30.41	29.84	31.94	248,991	166,735	29.87	26.40	27.59

TABLE NO. 6.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON JUNE 4, 1918.

COUNTRIES.	HORSES (including Ponies).				CATTLE.				SHEEP.			Proa.		
	Used solely for Agriculture, &c.*	Millions.†	Unbroken Horses.		Total.	Cows and Heifers in Milk.	Cows and Heifers in Calv.	Other Cattle.		Total.	1 Year Old and above.		Under 1 Year.	Total.
			1 Year & above.	Under 1 Year.				2 Years & above.	Under 2 Years.					
1. Aberdeen	20,874	135	5,627	2,564	31,016	38,604	4,268	50,011	88,598	181,476	115,484	100,876	216,810	10,866
2. Argyll	4,025	40	1,239	552	6,557	18,828	2,778	18,707	26,178	58,831	522,256	248,255	770,511	4,869
3. Argyll & Bute	6,575	79	1,383	689	10,157	44,546	10,614	12,704	40,174	109,038	210,644	139,903	850,547	13,058
4. Banff	6,064	18	1,625	713	627	9,041	1,287	7,737	25,256	45,270	35,232	27,656	62,588	2,455
5. Berwick	3,942	13	555	179	681	10,990	2,471	6,519	11,034	20,494	163,091	162,904	325,995	5,397
6. Bute	885	1	191	104	105	2,845	536	1,360	4,369	9,110	27,176	14,981	42,107	801
7. Caithness	4,074	20	812	478	268	5,632	809	2,443	1,867	21,359	74,439	52,386	126,775	1,292
8. Clackmannan	437	7	149	77	85	1,041	240	942	1,365	3,608	8,271	14,387	680	680
9. Dumfriesshire	1,233	7	256	107	263	1,866	1,727	2,105	3,942	18,964	45,204	250,191	551,649	8,965
10. Dumfries	5,021	37	1,352	577	3,222	17,449	5,512	12,466	32,541	67,968	321,458	36,318	71,522	799
11. Edinburgh	8,111	14	387	186	972	4,620	1,030	3,772	4,654	19,470	105,462	77,086	182,648	10,549
12. Elgin	3,433	16	858	323	391	5,607	662	6,068	13,167	24,504	39,181	19,250	48,431	1,706
13. Forfar	6,875	26	1,506	601	1,176	10,353	1,837	18,928	20,119	51,237	53,711	48,448	102,159	5,786
14. Forth	7,634	28	1,080	402	1,171	10,315	1,117	28,102	19,145	58,686	101,111	66,039	157,150	6,986
15. Haddington	2,992	11	296	104	401	3,804	246	7,867	4,043	13,408	71,357	55,681	137,038	1,664
16. Inverness	6,726	48	1,335	860	642	9,611	18,043	2,709	5,625	21,515	47,892	385,958	159,005	1,843
17. Kinross	9,707	7	703	293	368	5,078	5,908	493	8,953	12,419	27,776	26,248	47,718	2,141
18. Kirkcaldy	702	4	231	70	1,117	1,082	287	1,850	4,362	7,031	18,797	15,475	33,272	555
19. Kirkcubright	3,309	170	1,138	387	934	5,983	3,708	11,787	24,495	55,398	231,217	151,683	382,900	10,764
20. Leamark	5,923	91	1,065	548	1,173	8,830	28,934	11,966	34,012	78,774	136,149	91,669	227,818	7,486
21. Linlithgow	1,521	10	405	180	262	2,988	874	3,480	4,173	12,895	12,248	7,061	19,309	1,280
22. Nairn	1,896	6	283	107	116	1,410	1,820	191	700	3,847	6,558	5,504	16,502	477
23. Orkney	4,789	35	929	592	519	6,864	1,483	8,687	17,079	30,778	18,092	16,923	85,015	1,783
24. Peebles	787	7	119	33	160	1,106	1,553	1,580	3,873	7,540	118,768	85,580	199,348	424
25. Perth	9,276	64	1,947	698	1,903	13,288	1,996	10,041	39,902	75,967	369,592	315,162	614,754	6,513
26. Renfrew	2,238	55	432	206	479	5,400	3,752	9,783	6,976	25,751	24,750	86,068	265,609	1,769
27. Ross and Cromarty	5,485	34	1,136	484	659	7,793	2,277	7,468	19,065	48,965	167,751	94,766	232,580	2,630
28. Roxburgh	5,356	14	386	116	741	4,513	3,922	6,128	9,880	30,505	288,614	243,766	180,706	308
29. Selkirk	492	3	68	30	138	1,111	1,022	1,55	1,786	5,427	100,921	79,783	180,706	308
30. Shetland	3,180	102	776	431	166	4,655	1,058	2,225	6,684	14,713	93,559	39,903	133,484	609
31. Stirling	8,043	46	764	386	490	4,669	2,833	7,571	13,038	31,730	73,177	50,303	123,480	1,554
32. Strathend	1,965	13	312	149	189	2,627	7,53	1,434	4,821	11,517	136,579	66,243	202,822	563
33. Wigtown	5,498	69	1,142	500	741	5,950	2,497	1,912	19,407	56,800	44,909	44,909	110,891	16,283
Total	138,018	1,224	30,504	13,555	21,140	363,448	67,540	273,161	542,761	1,246,910	4,128,455	2,672,671	6,801,126	131,753

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

TABLE NO. 7.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[From Trade and Navigation Returns.]

	Quantities.			Values.		
	1911.	1912.	1913.	1911.	1912.	1913.
Wheat from—	Cwt.	Cwt.	Cwt.	£	£	£
Russia	18,106,100	9,005,000	5,011,100	7,037,078	3,940,464	1,984,964
Germany	51,300	316,100	447,600	20,028	135,293	162,038
Turkey	413,800	294,000	41,000	131,564	122,310	11,261
Roumania	1,952,300	697,000	38,600	787,381	302,831	14,962
United States	12,939,229	19,973,994	34,667,944	5,249,076	8,327,344	13,953,072
Chile	112,700	655,800	765,100	43,425	231,183	326,294
Argentine Republic	14,748,600	18,783,700	14,796,100	5,736,698	7,775,078	6,149,195
British East Indies	20,161,518	25,379,400	18,766,100	7,894,578	10,944,667	7,998,552
Australia	18,910,720	11,008,505	10,126,658	5,658,459	5,331,878	4,426,629
New Zealand	730,500	284,900	56,200	280,822	124,227	23,210
Canada	14,373,700	21,551,100	21,787,900	5,840,325	8,844,953	8,803,919
Other countries	567,320	723,040	13,700	230,387	312,009	6,774
Total	98,067,787	109,572,539	105,918,002	38,909,816	46,445,232	43,860,900
Wheat, meal, and flour, from—						
Germany	282,025	370,560	455,800	141,821	199,234	241,825
Belgium	35,300	38,200	32,100	16,942	19,016	17,144
France	899,700	870,700	301,700	173,177	171,875	137,803
Austria-Hungary	106,050	116,195	99,491	81,550	86,541	74,217
United States	5,116,411	4,212,604	6,157,644	2,697,066	2,284,166	3,247,423
Argentine Republic	88,000	100,000	191,300	33,652	41,866	78,178
Australia	443,400	690,550	349,075	223,474	368,648	188,218
Canada	3,268,768	4,003,877	4,168,563	1,769,831	2,216,077	2,261,783
Other countries	323,748	288,790	222,280	139,480	131,081	101,185
Total	10,065,132	10,189,476	11,978,153	5,277,043	5,518,504	6,347,771
Barley	24,546,420	20,126,294	22,439,548	8,266,145	7,871,581	8,077,214
Oats	18,278,037	18,300,400	18,231,168	5,390,970	6,338,451	5,692,869
Peas	2,196,094	2,574,707	1,978,318	1,012,862	1,291,602	1,006,743
Beans	1,029,101	1,256,741	1,540,405	375,383	470,847	568,189
Indian corn or maize	38,602,380	43,877,388	49,156,953	10,718,183	13,593,216	13,770,342
Indian corn meal	643,810	610,310	491,827	224,415	240,827	182,413
Oatmeal	835,985	832,218	868,877	598,405	602,574	607,761
Offals of corn and grain, including rice-meal	3,973,479	4,127,284	4,579,862	901,701	1,143,614	1,091,381
Rice, exclusive of rice-meal—						
From Brit. East Indies	2,986,747	3,582,485	2,582,769	1,805,878	2,011,006	1,283,292
From other countries	2,010,090	1,605,104	1,910,135	1,017,423	918,476	1,071,338
Other kinds of grain and corn	1,562,466	1,445,149	1,512,467	639,477	691,215	630,444
Other kinds of meal and flour	266,807	289,185	272,711	109,246	110,824	131,138
Total of corn, &c. . . . .	..	..	..	74,741,897	87,247,969	84,321,690

TABLE NO. 8.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1911, 1912, and 1913.

Years.	Australian.	South African.	English Fleeces.
	Per lb.	Per lb.	Per lb.
	s. d.	s. d.	s. d.
1911	0 10½	0 9	0 9½ to 0 14½
1912	0 10½	0 9	0 9½ to 0 14½
1913	0 11½	0 9½	0 11½ to 0 16½

TABLE NO. 9.—QUANTITIES AND VALUES OF CORN, MEAT, FOOD PRODUCTS,
in the Year 1913, with the

[From Trade and

	Quantities.			Values.		
	1911.	1912.	1913.	1911.	1912.	1913.
ANIMALS, LIVING:—	No.	No.	No.	£	£	£
Cattle	200,398	48,912	14,743	3,776,404	982,958	304,812
Sheep and lambs	47,673	15,480	501	74,174	28,798	761
Swine . . . . .	..	..	..	..	..	..
Total value . . . . .	..	..	..	8,850,578	1,006,761	305,068
GRAIN, FLOUR, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	98,067,787	109,572,539	105,918,002	38,909,816	46,445,233	43,860,900
Wheat meal and flour . .	10,065,182	10,189,476	11,978,153	5,277,043	5,518,504	6,847,771
Barley	24,545,420	20,126,294	22,439,548	8,266,145	7,871,581	8,077,214
Oats	18,273,037	18,300,400	18,231,163	5,990,970	6,338,451	5,692,869
Peas	2,196,094	2,574,707	1,978,313	1,012,862	1,291,602	1,006,743
Beans	1,029,101	1,256,741	1,540,405	875,383	470,847	568,189
Maize or Indian corn . .	38,602,380	43,877,388	49,166,953	10,713,188	13,593,216	13,770,842
Maize-meal	643,810	610,310	491,827	224,415	220,827	182,418
Oatmeal	835,985	832,218	868,877	598,405	602,574	607,761
Offals of corn and grain, } including rice-meal	3,973,470	4,127,284	4,579,852	901,701	1,143,614	1,091,881
Rice, exclusive of rice- meal—						
From British East Indies	2,966,747	3,532,465	2,532,769	1,305,878	2,011,006	1,288,292
From other countries . .	2,010,090	1,605,104	1,010,135	1,017,423	918,476	1,071,233
Other kinds of grain & corn	1,562,456	1,445,149	1,512,467	639,477	691,215	630,444
Other kinds of meal and } flour	266,807	289,135	272,711	100,246	110,824	131,138
Total value . . . . .	..	..	..	74,741,897	87,247,969	84,321,690
MEAT:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted	90,303	54,199	49,834	171,072	113,975	111,070
*Beef	7,361,094	8,005,819	9,203,310	11,184,482	13,674,137	16,070,833
*Mutton	5,330,070	5,021,529	5,338,380	9,576,446	9,698,788	10,922,727
Bacon	4,868,738	4,634,099	4,857,890	14,463,414	14,555,548	17,428,881
Hams	954,811	897,576	854,995	2,927,600	2,720,379	3,068,251
Pork, salted (not bacon or } hams)	236,549	213,238	240,943	292,068	270,265	298,275
*Pork	452,932	312,739	405,864	1,120,764	830,743	1,369,360
*Meat, unenumerated . .	726,091	832,975	723,329	1,315,447	1,450,009	1,429,997
" " salted	88,357	87,844	104,138	123,286	114,168	138,409
Meat, preserved, otherwise } than by salting	946,244	868,696	838,994	3,037,107	3,083,637	3,706,984
*Rabbits (dead)	525,666	480,925	525,578	712,600	617,168	781,376
Total of dead meat . . .	31,580,855	31,359,939	33,288,255	44,874,281	47,187,812	55,926,163
DAIRY PRODUCTS:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter	4,302,992	4,005,169	4,139,022	24,600,619	24,354,193	24,963,621
Margarine	944,405	1,852,427	1,518,297	2,461,325	3,514,045	3,917,701
Cheese	2,348,326	2,308,799	2,297,579	7,140,042	7,414,091	7,032,336
Total	7,595,723	7,666,385	7,954,898	34,201,986	35,282,329	35,913,658

* Fresh, Chilled, and Frozen.

AND ARTICLES AFFECTING AGRICULTURE, imported into the United Kingdom
Corresponding Figures for 1911 and 1912.

Navigation Returns.]

	Quantities.			Values.		
	1911.	1912.	1913.	1911.	1912.	1913.
POULTRY (alive or dead) . .	..	..	..	£ 918,197	£ 845,566	£ 998,161
GAME (alive or dead) . .	..	..	..	79,127	89,431	119,527
Eggs	Gt. Hunds. 19,057,897	Gt. Hunds. 19,085,082	Gt. Hunds. 21,579,950	7,967,555	8,394,524	9,590,602
Total value . . . . .	..	..	..	8,964,879	9,829,520	10,708,290
FRUIT, VEGETABLES, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Apples	2,332,618	2,381,946	2,257,419	2,232,992	2,507,024	2,230,870
Cherries	135,142	110,980	62,267	186,584	172,709	128,280
Plums	368,662	280,926	409,877	393,130	321,405	437,816
Pears	585,777	604,751	718,579	544,706	548,702	649,796
Grapes	701,376	617,074	582,587	785,326	731,278	740,543
Oranges	5,284,142	5,661,719	5,792,631	2,883,386	2,848,875	2,476,865
Lemons	852,263	728,737	686,650	476,647	407,117	477,222
Unenumerated	468,006	442,121	355,178	322,508	316,895	325,066
Onions	Bushels. 8,600,486	Bushels. 9,352,740	Bushels. 9,105,114	1,222,211	1,303,388	1,035,058
Potatoes	Cwt. 3,253,311	Cwt. 5,823,323	Cwt. 9,428,475	1,802,448	1,745,578	2,589,791
Vegetables, unenumerated } (raw)	..	..	..	426,319	489,605	519,340
Hops	169,184	243,883	262,164	1,095,218	1,719,769	1,763,003
Total value . . . . .	..	..	..	11,371,925	12,611,845	13,857,595
OTHER ARTICLES:—	Cwt.	Cwt.	Cwt.	£	£	£
Lard	1,822,763	1,790,487	2,005,360	4,251,758	4,573,136	5,552,462
Wool, sheep and lambs' . .	Lb. 704,514,850	Lb. 806,555,687	Lb. 802,096,772	32,977,752	33,235,015	34,276,942
Wood and timber—	Loads.	Loads.	Loads.			
Hewn (pit-props or pit-wood) }	2,896,009	2,923,806	3,451,323	3,376,086	3,660,388	4,445,066
Sawn or split, planed or dressed }	5,572,264	5,769,216	6,686,137	15,968,027	17,342,066	21,034,562
Staves	158,698	169,395	182,131	774,810	961,943	1,000,073
Oilseed-cake (not sweetened)	Tons. 838,226	Tons. 387,702	Tons. 406,706	1,963,644	2,498,321	2,539,591
Seeds—	Cwt.	Cwt.	Cwt.			
Clover and grass	238,612	238,858	260,751	550,071	697,066	623,769
Cotton	Tons. 590,959	Tons. 680,117	Tons. 615,196	4,398,675	4,800,116	4,648,344
Flax or linseed	Qrs. 1,393,874	Qrs. 1,426,519	Qrs. 3,275,882	4,738,536	4,366,199	7,195,393
Rape	232,199	187,268	265,560	431,376	376,939	531,725
Soya beans	Tons. 232,157	Tons. 188,760	Tons. 76,452	1,648,195	1,567,960	635,747
Bones (whether burnt or not)	45,833	41,203	40,685	226,225	217,544	219,687
Guano	34,134	14,115	25,548	198,000	81,568	149,189
Basic slag	22,666	49,313	51,133	37,889	89,174	102,114
Nitrate of soda (cubic nitre)	123,487	123,580	140,926	1,189,019	1,374,752	1,490,669
Phosphate of lime and rock } phosphate	493,415	520,367	539,016	779,706	840,996	874,166
Cotton, raw of 100 lb.	Centals. 23,070,831	Centals. 23,068,173	Centals. 21,742,987	71,155,514	80,333,960	70,570,511
Hemp	Tons. 140,305	Tons. 150,372	Tons. 146,278	3,267,949	3,801,792	4,530,329
Flax	80,039	105,930	102,453	3,798,368	4,392,744	4,771,319
Hides untanned—	Cwt.	Cwt.	Cwt.			
Dry	453,354	676,720	622,748	1,654,556	2,511,308	2,638,848
Wet	658,045	939,839	831,084	2,091,887	3,143,399	3,159,215
Petroleum	Gallons. 365,639,477	Gallons. 412,333,353	Gallons. 432,344,596	5,693,911	7,341,689	10,000,134

TABLE No. 10.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1911.	1912.	1913.	1911.	1912.	1913.
BACON, from—	Cwt.	Cwt.	Cwt.	£	£	£
Denmark	2,122,087	2,318,708	2,334,945	6,990,987	7,835,188	8,555,670
United States	1,817,885	1,698,847	1,808,871	5,067,538	4,968,287	6,128,330
Canada	615,807	387,401	248,522	1,798,946	1,175,527	868,129
Other countries	318,009	229,643	476,052	910,998	681,551	1,577,752
Total	4,868,788	4,634,099	4,857,890	14,468,414	14,555,548	17,428,881
BEEF (salted), from—						
United States	88,162	52,939	46,528	167,604	111,719	102,269
Other countries	2,141	1,260	8,806	8,468	2,256	8,801
Total	90,303	54,199	49,834	171,072	118,975	111,070
*BEEF (fresh and refrigerated)—						
United States	174,350	6,111	1,462	397,601	15,110	3,119
Uruguay	45,488	210,243	429,340	88,548	323,800	706,816
Argentine Republic	6,111,018	6,594,807	7,171,875	9,242,086	11,445,080	12,818,002
Australia	710,528	892,334	1,347,464	967,820	1,381,408	2,138,951
New Zealand	256,595	261,738	244,168	372,424	429,624	393,429
Denmark	4,125	10,019	804	11,188	26,459	912
Other countries	38,893	30,482	8,677	54,820	52,656	17,604
Total	7,861,094	8,005,819	9,203,310	11,184,482	18,674,137	16,070,833
HAMS, from—						
United States	887,308	819,907	760,567	2,712,287	2,476,904	2,716,004
Canada	62,295	74,525	90,082	197,524	231,379	326,695
Other countries	5,213	3,354	4,846	17,789	12,096	15,552
Total	954,811	897,876	854,995	2,927,600	2,720,379	3,068,251
*MEAT (unenumerated, fresh and refrigerated), from—						
Netherlands	207,839	188,697	208,971	501,026	465,644	509,865
United States	106,074	94,702	84,111	208,155	194,385	201,187
Argentine Republic	334,682	448,967	814,737	440,950	588,567	455,561
Other countries	165,858	188,453	224,658	288,602	324,641	401,823
Total	814,448	920,819	832,467	1,488,788	1,578,177	1,568,406
MEAT, preserved otherwise than by salting—						
Beef	637,710	585,088	647,938	1,905,674	2,018,396	2,692,443
Mutton	144,544	122,789	86,212	339,414	266,408	203,964
Other sorts	169,990	161,711	154,844	792,019	799,981	810,577
Total	946,244	868,696	888,994	3,087,107	3,088,687	3,706,984
*MUTTON (fresh and refrigerated)—						
Netherlands	118,386	159,318	123,048	277,576	393,381	312,381
Uruguay	69,454	50,490	173,073	97,844	89,719	303,528
Argentine Republic	1,782,066	1,589,200	1,012,347	2,596,589	2,773,005	1,908,355
Australia	1,291,606	977,668	1,665,859	2,226,676	1,744,111	2,128,439
New Zealand	1,981,467	2,165,438	2,200,525	3,226,751	4,555,786	4,965,310
Other countries	92,001	78,925	163,528	151,010	142,831	304,914
Total	5,330,070	5,021,529	5,338,880	9,576,446	9,698,783	10,923,727
PORK (salted, not Bacon or Hams), from—						
Denmark	186,577	165,489	187,527	186,339	159,720	179,986
United States	45,769	48,612	42,266	99,057	105,236	100,354
Other countries	4,208	4,187	11,150	6,667	5,809	17,995
Total	236,549	218,288	240,943	292,068	270,265	298,275
*PORK (fresh and refrigerated)—						
Netherlands	370,345	264,050	460,022	940,068	706,345	1,268,674
Belgium	14,587	7,109	8,546	41,645	20,430	24,806
United States	4,099	8,347	12,019	9,324	18,340	34,122
Other countries	68,951	33,238	15,177	129,727	85,628	41,698
Total	452,932	312,739	495,864	1,120,764	830,743	1,369,800
*RABBIT (dead), from—						
Belgium	42,524	29,189	31,078	118,997	81,712	87,086
Australia	394,155	314,843	419,076	463,544	390,464	570,950
New Zealand	73,708	72,657	62,833	35,489	95,655	85,000
Other countries	15,284	14,736	12,546	45,570	44,837	33,840
Total	525,666	430,925	525,578	712,600	617,168	781,876
Total of dead meat	21,580,855	21,359,989	23,228,355	44,874,281	47,137,812	55,326,168

* In the Official Returns from 1909 the imports are shown separately as "Fresh," "Chilled," and "Frozen."

TABLE No. 11.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND Eggs imported into the United Kingdom in each Year from 1911 to 1913 inclusive.

[From Trade and Navigation Returns.]

	Quantities.			Values.		
	1911.	1912.	1913.	1911.	1912.	1913.
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Russia . . .	638,284	683,650	751,414	3,312,569	3,656,742	3,831,366
Sweden . . .	360,357	335,014	332,331	2,183,770	2,113,871	2,047,634
Denmark . . .	1,707,178	1,618,048	1,706,759	10,509,137	10,356,001	10,657,589
Netherlands . .	104,655	113,716	153,172	586,479	641,638	921,738
France . . .	171,080	246,652	248,579	1,066,702	1,559,452	1,505,442
United States . .	23,052	2,596	164	119,172	15,250	947
Argentine Republic . .	24,209	67,244	72,418	145,154	396,964	394,529
Victoria . . .	441,481	264,522	275,519	2,336,382	1,585,878	1,506,399
New S. Wales . .	231,588	186,695	155,936	1,411,271	1,092,101	838,366
Queensland . . .	151,330	90,036	156,944	739,685	500,570	833,105
New Zealand . .	276,446	349,012	251,663	1,495,242	2,148,192	1,351,255
Canada . . .	61,936	27	813	355,063	145	4,522
Other countries . .	61,096	47,947	33,310	339,993	287,389	190,699
Total . . .	4,302,692	4,005,159	4,139,022	24,600,619	24,354,193	24,083,621
MARGARINE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands . .	896,086	1,314,505	1,483,417	2,322,668	3,396,927	3,810,409
France . . .	28,633	19,804	19,299	95,184	75,940	71,295
Other countries . .	19,686	18,118	15,581	43,473	41,178	35,997
Total . . .	944,405	1,352,427	1,518,297	2,461,325	3,514,045	3,917,701
CHEESE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands . .	207,917	263,286	292,134	525,097	701,696	760,383
Italy . . .	75,157	91,060	101,794	247,258	306,287	343,838
United States . .	150,321	21,227	22,449	432,119	66,565	67,217
Australia . . .	12,602	1,408	7,933	36,749	4,903	24,568
New Zealand . .	397,845	543,917	547,182	1,209,549	1,882,840	1,685,472
Canada . . .	1,473,275	1,352,570	1,293,768	4,590,515	4,347,832	4,038,627
Other countries . .	31,209	30,317	32,319	98,755	103,968	115,226
Total . . .	2,848,326	2,308,787	2,297,579	7,140,042	7,414,091	7,035,336
Eggs from—	Great Hundreds.	Great Hundreds.	Great Hundreds.	£	£	£
Russia . . .	10,041,890	9,677,098	11,453,277	3,796,408	3,951,028	4,745,229
Denmark . . .	3,992,986	3,623,815	4,264,943	2,030,607	1,942,573	2,296,843
Germany . . .	577,545	524,677	513,740	233,142	220,506	215,816
Netherlands . .	607,364	801,227	977,350	282,805	378,998	490,717
France . . .	652,038	669,687	702,281	303,515	308,511	326,102
Italy . . .	771,107	958,344	845,789	366,859	471,584	420,914
Austria-Hungary . .	1,022,554	997,987	883,651	423,668	422,360	375,943
Other countries . .	1,392,415	1,632,217	1,938,919	525,551	698,964	719,038
Total . . .	19,057,897	19,085,052	21,579,950	7,967,555	8,394,524	9,590,602

TABLE NO. 12.—NUMBER OF LIVE STOCK IN 1910, 1911, AND 1912, returned as entering the Markets at the Places scheduled under the Markets and Fairs (Weighing of Cattle) Act, 1891.

[From *Agricultural Statistics*, 1912.]

	CATTLE.			SHEEP.			SWINE.		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Aberdeen .	62,004	66,810	67,165	219,382	207,204	226,718	10,452	13,884	13,724
Dundee .	20,068	18,117	24,427	31,567	28,325	29,451	3,661	4,136	4,371
Edinburgh	74,251	71,855	57,509	258,472	238,795	226,927	7,855	9,044	7,647
Stirling .	65,575	59,135	62,789	263,967	271,225	265,185	4,000	5,456	5,068
Glasgow .	89,472	89,477	49,213	385,804	398,307	362,158	5,144	6,465	6,974
Perth . .	118,468	103,310	86,648	471,430	434,825	490,350	13,626	12,480	14,940
	430,818	407,613	347,751	1,630,622	1,578,681	1,609,734	44,238	50,965	52,724

TABLE NO. 13.—AVERAGE PRICES OF FAT CATTLE PER CWT. (LIVE WEIGHT) at the undermentioned Places in each Year from 1905 to 1912, together with the average Prices for Scotland, England, and Great Britain, compiled from the Returns received under the Markets and Fairs (Weighing of Cattle) Act, 1891.

	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Aberdeen . . .	32 6	32 5	32 8	33 6	34 5	35 10	34 7	38 9
Dundee . . .	32 0	31 11	32 8	33 5	34 0	35 8	34 0	38 1
Edinburgh . . .	33 10	34 2	35 1	36 5	37 2	38 7	36 10	41 2
Glasgow . . .	32 6	32 5	33 1	34 3	34 10	36 2	35 1	39 7
Perth . . .	34 4	34 6	35 8	37 0	37 11	40 3	37 10	42 2
SCOTLAND . . .	33 0	33 0	33 9	34 3	35 6	37 2	35 8	40 0
ENGLAND . . .	32 8	32 6	33 6	34 2	34 3	36 0	35 0	37 9
GREAT BRITAIN .	32 11	32 11	33 3	34 7	35 4	36 11	35 6	39 6

TABLE NO. 14.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND SWINE imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

	Number.			Value.		
	1911.	1912.	1913.	1911.	1912.	1913.
CATTLE, from—				£	£	£
Channel Islands . . .	2,342	2,125	2,895	41,905	89,245	55,075
Canada . . .	42,239	6,800	1,755	781,436	142,508	86,212
United States . . .	155,817	89,987	10,093	2,955,063	801,205	213,025
Argentine Republic . . .	..	..	..	..	..	..
Other countries . . .	..	..	..	..	..	..
Total . . .	200,398	48,912	14,748	3,776,404	982,958	804,312
SHEEP AND LAMBS, from—						
Canada . . .	4,868	1,198	501	8,038	1,790	..
United States . . .	42,805	14,287	..	66,196	22,003	751
Argentine Republic . . .	..	..	..	..	..	..
Other countries . . .	..	..	..	..	..	..
Total . . .	47,673	15,485	501	74,174	23,793	751
SWINE (not separately enumerated)	..	..	..	..	..	..
TOTAL VALUE OF ANIMALS LIVING	..	..	..	3,850,578	1,006,751	305,063

TABLE NO. 15.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1907-1913.

	1907.	1908.	1909.	1910.	1911.	1912.	1913.
HORSES :—							
Stallions . . .	199	249	334	277	228	287	265
Mares . . .	15,164	13,049	13,728	15,580	15,283	17,010	17,914
Geldings . . .	17,890	16,355	15,273	15,945	16,067	17,414	18,312
Total . . .	33,253	28,653	29,285	31,802	31,578	34,711	36,491
CATTLE: Oxen, Bulls, and Cows :—							
Fat . . .	292,104	258,695	265,953	259,415	269,527	336,569	354,734
Store . . .	492,790	528,386	605,312	543,391	390,041	193,922	692,228
Other cattle . . .	6,231	9,739	13,377	12,334	8,789	8,851	8,152
Calves . . .	50,858	64,850	52,785	52,800	26,471	15,767	53,045
Total . . .	841,973	861,670	837,426	867,980	694,828	555,099	1,108,159
SHEEP :—							
Sheep . . .	317,039	267,076	480,889	347,784	300,124	328,028	319,284
Lambs . . .	343,876	254,608	440,019	381,557	348,073	290,631	336,416
Total . . .	660,915	521,684	920,908	729,341	648,197	618,659	655,700
PIGS :—							
Fat . . .	448,578	371,537	316,891	301,576	323,574	253,165	187,422
Store . . .	33,529	15,939	10,237	22,479	18,766	12,076	12,874
Total . . .	482,107	387,476	327,128	324,055	342,340	265,241	200,296

EDINBURGH CORN-MARKET GRAIN TABLES for **WHEAT, BARLEY, OATS, and BEANS**, showing the Quantity offered for Sale, the Quantity Sold, the Highest, Lowest, and Average Prices; also the Bushel-weights of the Highest and Lowest Prices of each kind of Grain for every Market-day, likewise the Results for every Month, and the final Result for the year 1913.

WHEAT.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel-weights for	
						Highest Price.	Lowest Price.
1913						lb. lb.	lb. lb.
Jan.			s. d.	s. d.	s. d.		
8	267	192	36 0	30 0	35 2	68	59
15	182	130	33 6	30 6	32 5	60½	58½
22	529	395	35 0	31 6	38 10	68	58½
29	591	364	35 0	24 6	33 2	68	56½
	1,569	1,081	35 2	28 0	33 8		
Feb.							
5	862	440	35 0	30 6	32 6	63	59½
12	649	424	36 0	30 0	33 0	63	60½
19	322	243	33 6	31 0	32 7	62 63	58½
26	517	382	34 3	29 6	32 5	63½	58½
	2,350	1,489	34 7	30 5	32 8		
March							
5	234	72	34 0	30 0	32 4	68	61
12	419	409	33 6	28 6	31 5	62	60
19	535	335	33 6	30 0	31 6	63	60
26	52	52	29 6	27 0	28 11	60	53½
	1,240	868	32 10	29 2	31 5		
April							
2	158	158	32 0	25 0	30 8	61½	56½
9	96	66	31 0	29 0	30 6	62	61
16	226	131	32 6	30 6	31 11	62 63	62
23	240	235	33 6	29 0	32 11	62 63	57½
30	235	235	35 0	31 3	33 7	63	59½
	955	825	32 10	30 1	32 4		
May							
7	345	270	35 0	33 0	34 1	63	61½ 62
14	986	986	35 0	28 0	33 11	62 63	62
21	494	454	35 0	32 6	33 11	63	61
28	487	392	35 0	29 0	33 11	63	62
	2,312	2,102	35 0	31 2	33 11		
June							
4	1,108	1,058	35 3	27 0	34 2	63	60
11	959	385	36 0	34 0	35 0	63	62
18	2,147	1,747	35 0	29 0	33 7	63	59½
25	1,541	1,135	34 0	28 0	32 6	63	60½
	5,755	4,325	35 0	30 3	33 7		
July							
2	1,083	593	33 6	28 0	32 7	62	61½
9	359	268	33 9	29 0	32 2	63	63
16	133	133	34 0	32 0	33 1	63	63
23	525	525	34 0	32 9	33 6	63	61
30	1,420	1,366	34 0	32 0	33 8	63	61 62
	3,570	2,923	33 10	31 4	33 1		

WHEAT—continued.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel- weights for			
						Highest Price.		Lowest Price.	
1913 Aug.	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb. lb.		lb. lb.	
6	769	689	35 6	30 9	33 10	65		61	
13	745	722	34 6	32 0	33 5	63		62	
20	885	700	34 0	32 6	33 2	63		61	63
27	498	428	34 3	32 6	33 8	63		63	
	2,897	2,539	34 4	33 5	33 6				
Sept.									
3	365	26	33 9	..	33 9	63		..	
10	357	45	34 0	33 0	33 1	63		63	
17	52	22	33 6	..	33 6	63		..	
24	276	100	33 3	..	33 3	63		..	
	1,050	193	33 5	33 0	33 4				
Oct.									
1	269	74	33 6	26 0	31 0	62		63	
8	416	301	36 0	27 0	30 9	62		61	
15	422	44	34 0	22 9	28 7	62		58½	
22	500	138	34 6	27 6	31 9	62		61	
29	699	245	34 6	28 0	30 5	63		62	
	2,306	802	34 9	26 6	30 9				
Nov.									
5	1,135	311	40 0	28 0	30 3	63		60½	61
12	951	470	40 0	26 0	29 3	64		59½	
19	939	603	34 0	27 0	29 10	65		60½	
26	597	401	32 0	25 0	29 6	63		62	
	3,622	1,735	36 11	27 3	29 8				
Dec.									
3	456	207	32 6	29 0	31 3	65		61½	
10	472	425	31 0	28 0	29 6	63		63	
17	310	290	31 0	28 6	29 8	63		62	
24	210	210	30 0	29 6	29 9	63		62	
31	44	44	30 0	29 0	29 8	63		63	
	1,492	1,176	31 0	28 8	29 11				
Result for year	29,118	20,108	34 0	30 2	32 8				

BARLEY.

1913 Jan.							
8	1,099	603	34 9	31 6	33 1	54½	55
15	1,119	371	35 0	26 6	32 0	56	56
22	839	471	31 0	27 6	29 5	52 55	52
29	460	330	34 0	28 6	31 4	53½	55
	3,517	1,775	33 7	29 6	31 7		
Feb.							
5	572	403	32 0	24 6	30 4	53½ 55	51½
12	594	273	35 0	27 6	31 10	56	54
19	579	260	35 6	26 6	28 4	55	53½
26	863	564	38 0	26 0	31 4	56	54 55
	2,608	1,505	33 11	26 2	30 8		

BARLEY—continued.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel- weights for			
						Highest Price.		Lowest Price.	
1918									
March	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	1b.	1b.	1b.	1b.
5	674	232	33 0	26 0	29 4	55	56	54	
12	369	145	33 0	25 0	28 1		55	52½	
19	655	466	33 0	27 0	29 5		56	55	
26	627	328	30 6	26 6	29 2		56	53	
	2,325	1,171	32 4	26 2	29 2				
April									
2	405	125	29 0	24 0	26 0		56	53	
9	101	62	29 6	25 0	27 0		56	56	
16	98	24	27 6	..	27 6		54	..	
23	120	40	27 0	24 9	25 5		56	53½	
30	95	45	26 6	26 0	26 2		54	53½	
	819	296	28 4	24 8	26 3				
May									
7	123	123	29 0	25 0	28 2		55	54	
14	148	148	30 0	23 6	27 8	55	56	52½	
21	18	..	..	..	..		..	..
28	84	30	27 6	19 3	22 10		55	53	
	373	301	29 5	22 8	27 5				
June									
4	43	43	28 6	..	28 6		56	..	
11	..	..	..	..	..		..	..
18	..	..	..	..	..		..	..
25	..	..	..	..	..		..	..
	43	43	28 6	..	28 6				
July									
2	..	..	..	..	..		..	..
9	..	..	..	..	..		..	..
16	..	..	..	..	..		..	..
23	6	6	31 0	..	31 0		56	..	
30	..	..	..	..	..		..	..
	6	6	31 0	..	31 0				
Aug.									
6	24	24	26 0	..	26 0		56	..	
13	..	..	..	..	..		..	..
20	..	..	..	..	..		..	..
27	145	145	33 0	26 6	31 11		56	53½	
	169	169	31 8	26 6	31 1				
Sept.									
3	245	245	34 0	30 0	32 10		56	56	
10	823	742	35 0	27 0	33 2		56	56	
17	647	541	35 3	27 0	32 3		55½	55	
24	687	320	35 0	26 0	30 7		56	55	
	2,402	1,848	34 7	27 11	32 5				
Oct.									
1	1,422	1,225	33 0	25 6	30 1		56	56	
8	1,206	783	33 6	23 0	28 8		56	55	
15	933	878	34 0	26 0	30 6		56½	55	
22	1,275	725	32 6	23 6	26 8		56	55	
29	1,172	855	33 0	22 0	26 2		56	54	
	6,018	4,471	33 4	23 10	28 7				

BARLEY—continued.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel-weights for			
						Highest Price.		Lowest Price.	
	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb. lb.		lb. lb.	
1918									
Nov.									
5	1,292	1,188	32 6	22 0	28 8	56		53½	55
12	1,822	833	34 6	20 9	28 8	56		55	55½
19	863	378	32 3	25 0	30 8	56		56	
26	1,229	1,179	34 0	23 0	28 9	58½		54	
	4,706	3,528	32 11	22 7	28 11				
Dec.									
3	1,804	602	32 0	24 0	27 11	56		55	56
10	1,004	422	32 6	24 0	28 10	56		55	56
17	1,280	663	31 6	20 6	27 5	56		55	
24	1,822	755	31 6	22 0	26 7	58½		53	
31	954	805	29 0	21 6	26 2	56		55	
	5,864	2,747	31 3	22 9	27 5				
Result for year	28,845	17,855	32 7	25 2	29 4				

OATS.

1918							
Jan.							
8	875	727	24 6	17 0	22 0	44	35
15	988	782	24 6	20 9	22 2	43½	41
22	791	691	25 6	19 0	22 9	42	40
29	1,182	800	25 9	18 0	23 3	45	39½
	3,786	2,980	24 11	19 9	22 7		
Feb.							
5	729	449	26 3	19 9	22 8	44½	41
12	1,098	553	26 0	21 6	23 8	44½	42
19	2,197	836	29 0	20 6	23 2	44	42
26	2,815	768	29 0	16 0	22 9	44	39½
	6,384	2,606	26 11	19 9	23 1		
March							
5	1,801	735	27 6	19 9	22 9	43½	42
12	1,479	574	28 0	20 0	22 11	42	43
19	2,001	961	27 3	15 0	22 1	44½	36½
26	1,370	719	26 0	19 0	22 6	44½	40
	6,551	2,989	26 10	18 0	22 6		
April							
2	558	399	25 6	20 0	23 2	44½	41
9	783	634	25 6	21 9	22 9	43½	42
16	652	478	26 6	19 6	23 7	44½	37½
23	896	490	26 6	19 0	24 2	44	40
30	1,203	579	26 6	19 0	23 10	45½	40
	4,092	2,486	26 0	21 2	23 6		
May							
7	721	383	26 9	21 0	23 9	44½	42
14	1,229	461	25 6	16 0	22 9	44½	36½
21	1,093	583	25 0	18 6	22 9	44½	41
28	817	347	25 3	22 0	23 2	44½	42 43
	3,860	1,774	25 5	20 4	23 1		

OATS—continued.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel- weights for	
						Highest Price.	Lowest Price.
1913	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb. lb.	lb. lb.
June							
4	588	470	25 8	22 8	23 8	44½	42
11	684	824	24 9	22 0	23 10	44½	41
18	848	598	25 6	23 0	23 9	43½	42
25	1,016	546	25 0	21 0	23 6	44½	39½
	3,086	1,938	25 8	22 9	23 8		
July							
2	902	876	26 0	18 9	21 7	44½	40
9	467	334	26 0	22 9	24 0	44	42
16	550	470	24 6	22 0	23 1	42	42
23	414	314	25 6	20 6	23 9	44	41
30	954	650	25 6	23 0	24 5	43½	40 42
	3,287	2,144	25 8	21 4	23 6		
Aug.							
6	506	195	25 8	21 0	23 8	44	38
13	659	556	26 0	21 0	24 1	44½	42
20	915	480	25 6	21 0	24 8	43½	42
27	1,181	924	25 0	22 0	23 4	44½ 45½	42
	3,261	2,155	25 4	21 4	23 9		
Sept.							
8	1,191	868	24 0	20 9	22 9	44½	42
10	770	665	24 11	20 0	22 5	44½	42
17	713	563	25 6	19 0	22 10	44½	42
24	610	560	25 0	19 0	22 4	44	42
	3,284	2,656	24 8	19 11	22 7		
Oct.							
1	943	363	23 6	21 0	22 8	42 43	44
8	1,338	841	23 0	19 0	21 2	44½	42 43
15	1,298	922	25 0	17 0	20 5	44½	42
22	1,654	1,037	23 6	17 0	20 6	43½	42
29	1,048	564	24 6	18 0	20 1	45½	42
	6,281	3,697	23 7	18 2	20 9		
Nov.							
5	1,526	819	25 6	16 9	20 8	45½	42
12	1,443	792	23 6	17 6	20 8	44½	42
19	1,749	813	24 9	17 6	20 5	47	42
26	1,732	556	25 3	16 0	19 6	46½	42
	6,450	2,980	24 7	16 11	20 5		
Dec.							
8	1,725	918	22 6	18 6	19 11	44½	42 42½
10	1,691	913	23 0	17 8	20 3	43½	40
17	1,829	700	22 6	18 0	20 5	42½ 44	42
24	1,945	817	21 0	17 0	18 9	44½	40
31	1,107	487	22 0	17 9	19 6	44½	41
	8,387	3,865	22 4	18 2	19 10		
Result for year	58,659	32,270	24 11	20 2	22 2		

BEANS.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel- weights for	
						Highest Price.	Lowest Price.
1918	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb. lb.	lb. lb.
Jan.							
8	80	..	..	..	..	..	..
15	..	..	..	..	..	..	..
22	25	..	..	..	..	..	..
29	25	..	..	..	..	..	..
	80	..	..	..	..
Feb.							
5	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..
26	85	..	..	..	..	..	..
	85	..	..	..	..
March							
5	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..
19	20	..	..	..	..	..	..
26	..	..	..	..	..	..	..
	20	..	..	..	..
April							
2	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..
		
May							
7	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..
21	50	..	..	..	..	..	..
28	..	..	..	..	..	..	..
	50	..	..	..	..
June							
4	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..
		
July							
2	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..
		
Aug.							
6	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..
		

BEANS—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel- weights for	
						Highest Price.	Lowest Price.
1918							
Sept.	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb. lb.	lb. lb.
8	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..
		
Oct.							
1	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..
		
Nov.							
5	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..
		
Dec.							
3	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..
		
Result for year }	235	..	..	..	..

PRICES OF SHEEP SINCE 1818.

TABLE NO. 1.—CHEVIOT SHEEP.

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1818	28 0	to 30 0	not quoted.		8 0	to 10 0
1819	25 0	" 27 0	15 0	to 17 0	10 6	" 12 0
1820	20 0	" 25 0	16 0	" 17 0	10 0	" 11 0
1821	18 0	" 20 0	14 0	" 16 0	7 6	" 8 0
1822	12 6	" 13 0	8 0	" 8 6	4 6	" 0 0
1823	13 6	" 18 0	7 0	" 10 6	5 6	" 6 0
1824	14 0	" 19 0	7 0	" 9 0	4 6	" 6 0
1825	29 0	" 32 0	15 0	" 19 0	9 0	" 10 6
1826	17 6	" 21 6	13 0	" 15 0	7 0	" 7 6
1827	15 0	" 24 0	not quoted.		7 0	" 8 0
1828	18 0	" 27 6	12 0	to 15 0	7 0	" 8 3
1829	18 0	" 24 0	12 6	" 14 0	7 0	" 8 6
1830	15 0	" 21 0	8 0	" 11 0	6 0	" 6 9
1831	18 0	" 25 0	9 0	" 13 0	7 0	" 8 0
1832	19 0	" 24 0	11 0	" 16 0	7 0	" 9 0
1833	22 0	" 31 0	13 6	" 20 0	8 0	" 11 3
1834	22 0	" 31 0	13 6	" 21 0	9 0	" 11 6
1835	22 0	" 27 6	18 0	" 20 6	8 0	" 11 0
1836	24 0	" 31 6	16 0	" 19 0	10 0	" 14 0
1837	19 0	" 28 0	14 0	" 19 0	10 0	" 13 0
1838	28 0	" 30 6	17 0	" 22 0	12 0	" 14 0
1839	23 0	" 31 0	14 0	" 19 0	0 0	" 13 0
1840	24 0	" 33 0	15 0	" 23 0	7 0	" 11 6
1841	23 0	" 30 0	14 0	" 22 0	8 0	" 12 0
1842	22 6	" 28 0	13 0	" 17 0	7 6	" 10 0
1843	19 0	" 25 0	8 0	" 12 0	5 0	" 8 0
1844	21 0	" 29 0	10 0	" 16 0	8 0	" 10 6
1845	23 0	" 33 0	18 0	" 20 0	8 0	" 13 0
1846	24 0	" 33 6	14 6	" 21 6	10 0	" 14 6
1847	24 0	" 35 0	13 6	" 24 0	11 6	" 15 0
1848	23 0	" 34 6	13 0	" 28 0	11 6	" 15 0
1849	21 0	" 30 2	12 0	" 21 0	0 0	" 14 0
1850	20 6	" 29 6	12 0	" 20 0	8 0	" 13 0
1851	21 6	" 31 0	13 0	" 21 0	8 9	" 14 0
1852	21 0	" 32 0	15 0	" 23 0	8 0	" 14 0
1853	26 6	" 38 0	17 0	" 28 6	9 0	" 17 0
1854	25 0	" 36 0	17 0	" 26 0	9 0	" 16 6
1855	23 6	" 36 0	16 0	" 25 0	10 0	" 17 0
1856	22 0	" 35 6	15 6	" 24 0	10 0	" 15 0
1857	24 0	" 36 0	14 6	" 26 0	10 6	" 14 6
1858	24 0	" 34 6	14 0	" 24 6	10 6	" 14 0
1859	25 0	" 34 6	16 0	" 25 0	10 8	" 14 9
1860	26 0	" 38 0	17 6	" 27 6	12 6	" 17 6
1861	25 0	" 38 6	16 0	" 28 0	9 0	" 16 0
1862	27 0	" 37 6	17 6	" 28 0	10 0	" 16 0
1863	25 0	" 38 6	19 0	" 28 6	10 6	" 16 0
1864	31 0	" 41 0	21 0	" 31 6	14 0	" 18 0
1865	32 6	" 44 0	22 6	" 33 6	14 6	" 20 0
1866	37 0	" 50 0	29 0	" 42 6	15 0	" 26 0
1867	26 0	" 58 0	18 0	" 25 6	12 0	" 16 0
1868	30 0	" 32 0	15 6	" 21 0	7 6	" 13 0
1869	28 0	" 38 0	15 0	" 22 6	7 6	" 14 0
1870	35 6	" 43 0	18 0	" 28 0	10 0	" 17 0
1871	36 6	" 49 0	22 0	" 33 6	14 0	" 20 0
1872	45 0	" 56 0	32 0	" 42 0	16 0	" 22 0
1873	42 0	" 51 0	25 0	" 42 0	15 6	" 22 0
1874	33 6	" 44 6	21 0	" 36 0	12 0	" 17 0
1875	38 0	" 48 6	21 0	" 34 0	13 6	" 23 6
1876	40 0	" 52 6	23 0	" 30 0	13 6	" 25 0
1877	41 0	" 51 0	25 0	" 37 0	15 0	" 24 0
1878	35 6	" 48 0	23 6	" 35 0	14 0	" 22 0
1879	34 0	" 44 0	21 0	" 34 0	14 0	" 20 0
1880	30 0	" 43 6	20 0	" 30 0	12 6	" 20 0
1881	32 0	" 45 6	29 0	" 34 0	14 0	" 20 0
1882	40 0	" 51 0	30 0	" 40 0	14 0	" 20 6
1883	44 0	" 55 6	34 6	" 46 6	15 6	" 23 0
1884	36 0	" 47 6	29 6	" 41 6	12 6	" 20 0
1885	30 0	" 38 0	24 0	" 31 0	12 0	" 18 0
1886	32 0	" 40 0	21 0	" 29 0	12 6	" 19 6

TABLE No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.				Ewes.				Lambs.						
	s.	d.		s.	d.	s.	d.		s.	d.		s.	d.		
1887	29	0	to	36	0	18	0	to	26	0	11	0	to	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6
1889	36	0	"	44	0	24	0	"	32	0	14	0	"	22	0
1890	31	0	"	40	0	22	0	"	30	0	12	6	"	20	0
1891	27	0	"	38	0	16	0	"	25	0	9	0	"	16	0
1892	22	0	"	30	6	13	0	"	22	0	5	0	"	11	0
1893	26	0	"	35	6	18	0	"	28	6	8	6	"	15	0
1894	26	0	"	37	0	20	0	"	31	0	10	6	"	18	6
1895	28	0	"	39	0	22	0	"	34	0	11	6	"	19	6
1896	24	6	"	34	0	19	0	"	30	6	9	0	"	16	6
1897	27	0	"	36	0	21	0	"	31	6	11	0	"	17	6
1898	27	0	"	37	0	22	0	"	32	6	12	0	"	18	6
1899	24	0	"	33	0	20	0	"	30	6	10	6	"	16	0
1900	26	0	"	36	0	22	0	"	32	6	12	0	"	17	0
1901	25	0	"	32	6	20	0	"	29	6	11	0	"	16	0
1902	24	0	"	31	6	18	0	"	27	0	9	6	"	14	6
1903	26	0	"	34	0	21	0	"	31	0	11	4	"	18	0
1904	28	6	"	36	6	23	0	"	32	6	13	0	"	20	0
1905	27	6	"	35	0	23	0	"	33	0	14	0	"	21	0
1906	30	0	"	38	0	26	0	"	34	6	15	0	"	23	0
1907	28	0	"	34	0	22	0	"	30	6	13	6	"	19	6
1908	26	0	"	32	6	21	0	"	27	6	11	6	"	17	0
1909	24	0	"	31	0	18	0	"	25	6	9	6	"	16	0
1910	27	0	"	35	0	22	0	"	31	0	12	0	"	20	0
1911	24	0	"	31	6	18	6	"	27	6	10	6	"	18	0
1912	26	0	"	34	6	22	0	"	31	0	13	0	"	21	0
1913	30	0	"	39	0	24	0	"	35	6	16	0	"	24	0

TABLE No. 2.—BLACKFACE SHEEP.

Year.	Wethers.				Ewes.				Lambs.				
	s.	d.		s.	d.	s.	d.		s.	d.		s.	d.
1819	22	0	to	24	0	12	0	to	15	0		5	0
1820	20	0	"	23	8	15	6	"	17	0		7	0
1821	18	0	"	20	0	12	0	"	13	0		6	0
1822	11	6	"	13	6	5	6	"	6	0		4	6
1823	12	0	"	16	0	5	0	"	6	6		4	0
1824	9	6	"	13	6	6	0	"	7	0		4	0
1825	22	0	"	26	0	11	0	"	13	6		6	0
1826	15	0	"	17	0	8	0	"	9	0		4	6
1827	14	0	"	18	6	7	0	"	10	0		6	0
1828	15	0	"	20	6	8	0	"	11	0		5	0
1829	14	0	"	18	0	9	0	"	10	0		6	0
1830	9	6	"	13	6	4	0	"	6	0		4	6
1831	13	0	"	17	0	5	0	"	7	6		5	0
1832	14	0	"	18	0	7	0	"	11	6		6	0
1833	16	0	"	24	0	7	6	"	12	0		6	6
1834	16	0	"	22	6	10	0	"	13	0		6	0
1835	15	0	"	18	9	10	0	"	13	0		7	0
1836	15	0	"	21	0	9	0	"	12	0		8	6
1837	13	0	"	16	0	8	0	"	12	0		8	0
1838	15	0	"	20	6	10	0	"	13	0		not quoted.	
1839	15	0	"	22	0	10	0	"	12	0		7	0
1840	15	0	"	22	6	11	0	"	12	0		7	0
1841	16	0	"	20	0	9	0	"	11	0		6	0
1842	14	0	"	19	0	7	6	"	8	0		5	6
1843	not quoted.				4	9	"	6	6	not quoted.			
1844	15	0	to	21	0	6	6	"	10	0		5	0
1845	14	0	"	23	0	8	0	"	12	0		6	0
1846	13	0	"	24	0	10	0	"	13	0		8	0
1847	20	6	"	25	0	10	6	"	14	0		8	6
1848	20	0	"	24	0	11	3	"	12	0		8	6
1849	not quoted.				not quoted.							7	0
1850	not quoted.				not quoted.							7	0
1851	17	6	to	23	0	9	0	to	12	0		6	6
1852	18	6	"	22	0	9	6	"	12	0		4	6
1853	23	0	"	27	0	14	6	"	16	6		8	0
1854	20	0	"	26	0	11	0	"	16	6		8	0
1855	23	6	"	26	6	14	0	"	16	0		10	0
1856	17	0	"	24	0	10	0	"	20	0		7	6
1857	20	0	"	29	0	10	6	"	15	0		9	3
1858	20	0	"	27	6	9	9	"	18	9		8	3
1859	20	0	"	25	0	10	0	"	14	0		8	9
1860	21	0	"	27	3	11	0	"	16	0		10	0
1861	21	0	"	29	0	12	0	"	22	0		6	3
1862	16	9	"	27	0	12	0	"	18	8		6	0

TABLE NO. 2.—BLACKFACE SHEEP—Continued.

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1863	20 0	to 30 6	18 0	to 16 0	8 0	to 11 6
1864	25 0	" 30 0	15 0	" 19 0	10 0	" 18 6
1865	15 6	" 32 6	15 0	" 25 0	10 0	" 17 0
1866	31 6	" 40 0	20 0	" 36 0	18 6	" 22 6
1867	20 0	" 30 6	14 0	" 22 0	7 6	" 13 6
1868	20 0	" 26 0	10 6	" 13 6	7 0	" 13 0
1869	22 0	" 28 0	11 0	" 14 0	6 9	" 9 0
1870	27 0	" 32 6	13 0	" 22 0	8 0	" 14 6
1871	23 0	" 37 0	13 0	" 23 0	11 0	" 16 3
1872	31 6	" 45 0	18 0	" 32 0	12 6	" 18 0
1873	28 0	" 39 0	16 6	" 27 0	7 0	" 16 0
1874	25 0	" 35 0	13 0	" 20 0	7 0	" 14 0
1875	26 6	" 37 6	15 0	" 21 3	9 6	" 17 6
1876	30 0	" 40 0	19 0	" 24 0	13 0	" 20 6
1877	35 0	" 38 9	18 0	" 25 0	13 6	" 23 0
1878	30 0	" 36 0	17 0	" 23 0	12 0	" 22 0
1879	25 0	" 35 9	16 0	" 24 0	10 6	" 20 0
1880	25 0	" 38 0	16 6	" 32 6	10 0	" 17 0
1881	30 0	" 39 0	15 0	" 23 0	10 0	" 15 0
1882	33 0	" 46 0	20 0	" 28 0	12 6	" 18 6
1883	36 0	" 50 6	24 6	" 33 0	14 0	" 21 6
1884	29 0	" 43 6	19 6	" 28 0	12 0	" 19 6
1885	24 0	" 34 0	13 0	" 22 6	10 0	" 15 0
1886	25 0	" 34 6	12 0	" 22 0	10 6	" 16 0
1887	22 0	" 30 0	11 0	" 19 0	8 0	" 13 0
1888	22 0	" 32 0	13 0	" 24 0	10 0	" 15 0
1889	26 0	" 40 0	18 0	" 29 0	13 0	" 22 0
1890	24 0	" 37 0	14 0	" 27 0	10 6	" 19 0
1891	21 0	" 37 0	10 0	" 24 0	7 6	" 15 0
1892	16 0	" 28 6	6 0	" 17 0	3 0	" 10 0
1893	21 0	" 37 0	12 0	" 24 0	7 0	" 14 6
1894	30 0	" 37 6	14 6	" 26 6	8 6	" 16 0
1895	23 0	" 41 0	16 0	" 28 6	9 0	" 17 0
1896	19 0	" 35 4	13 0	" 24 0	6 0	" 13 6
1897	21 0	" 36 6	15 0	" 25 6	7 0	" 14 6
1898	22 0	" 37 0	16 0	" 26 6	8 0	" 15 0
1899	20 0	" 33 6	13 0	" 24 0	5 6	" 13 0
1900	23 0	" 36 0	16 0	" 26 6	8 0	" 15 6
1901	20 0	" 35 0	14 0	" 25 6	6 6	" 14 6
1902	18 6	" 34 0	12 0	" 24 0	6 0	" 14 0
1903	21 0	" 36 0	15 0	" 28 0	7 0	" 16 6
1904	23 0	" 38 6	18 0	" 30 0	8 6	" 17 6
1905	21 6	" 37 0	19 0	" 31 0	9 0	" 18 6
1906	23 0	" 38 0	20 0	" 33 0	10 0	" 19 6
1907	21 0	" 38 6	17 0	" 28 0	8 6	" 17 6
1908	19 6	" 30 0	15 0	" 24 6	8 0	" 16 0
1909	17 0	" 28 0	11 6	" 22 0	6 3	" 13 0
1910	21 0	" 32 6	16 0	" 27 6	8 0	" 17 0
1911	19 0	" 29 6	14 0	" 24 0	7 0	" 15 0
1912	21 6	" 32 6	17 0	" 27 6	9 6	" 17 6
1913	24 6	" 36 0	21 0	" 31 0	12 6	" 21 6

TABLE NO. 3.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.		White Cheviot.		Laid Highland.		White Highland.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1818	40 0	to 42 2	..	..	20 0	to 22 6	..	..
1819	21 0	" 22 0	..	..	10 0	" 10 3	..	..
1820	20 0	" 22 0	..	..	9 0	" 10 0	..	..
1821	18 0	" 20 0	..	..	9 0	" 10 0	..	..
1822	12 6	" 14 6	..	..	5 0	" 6 6	..	..
1823	9 0	" 10 6	..	..	5 0	" 5 9	..	..
1824	13 6	" 15 0	..	..	6 0	" 6 3	..	..
1825	10 6	" 22 0	..	..	10 0	" 10 6	..	..
1826	11 0	" 14 0	..	..	5 0	" 5 6	..	..
1827	11 0	" 14 0	..	..	5 6	" 6 9	..	..
1828	8 0	" 11 0	..	..	5 6	" 6 0	..	..
1829	8 6	" 11 0	..	..	4 3	" 0 0	..	..
1830	9 6	" 11 0	..	..	4 6	" 5 0	..	..
1831	17 0	" 20 0	..	..	7 6	" 8 6	..	..
1832	14 0	" 16 0	..	..	7 0	" 7 6	..	..
1833	18 0	" 20 7	..	..	10 0	" 11 0	..	..
1834	21 0	" 24 6	..	..	5 6	" 7 0	..	..
1835	19 0	" 20 6	..	..	9 6	" 10 8	..	..
1836	21 0	" 25 0	..	..	10 0	" 14 0	..	..
1837	12 0	" 14 0	..	..	7 0	" 7 8	..	..

TABLE NO. 3.—PRICE OF WOOL—Continued.

Year.	Laid Cheviot.		White Cheviot.		Laid Highland.		White Highland.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1888	19 0	to 22 6	..	..	6 0	to 10 0	..	..
1889	18 0	" 20 0	..	..	8 0	" 12 0	..	..
1890	15 0	" 0 0	..	..	7 0	" 0 0	..	..
1891	15 0	" 16 9	..	..	6 0	" 7 5	..	..
1892	12 6	" 14 0	..	..	not quoted.	..	..	..
1893	9 0	" 11 6	..	..	5 0	to 6 0	..	..
1894	15 0	" 18 0	..	..	not quoted.	..	..	..
1895	14 6	" 17 6	..	..	7 6	to 8 6	..	..
1896	12 0	" 14 6	..	..	8 0	" 8 6	..	..
1897	12 6	" 14 0	..	..	not quoted.	..	..	..
1898	9 6	" 11 0	..	..	4 9	to 0 0	..	..
1899	12 0	" 16 6	..	..	6 0	" 6 3	..	..
1890	15 0	" 17 6	..	..	8 0	" 8 6	..	..
1891	12 0	" 16 0	..	..	8 0	" 9 3	..	..
1892	13 0	" 15 0	..	..	8 0	" 9 0	..	..
1893	19 0	" 22 0	..	..	11 0	" 12 6	..	..
1894	12 0	" 15 0	..	..	7 6	" 8 6	..	..
1895	14 6	" 19 0	..	..	8 6	" 9 0	..	..
1896	19 0	" 21 6	..	..	11 0	" 0 0	..	..
1897	19 0	" 24 0	..	..	13 0	" 14 8	..	..
1898	15 0	" 17 0	..	..	8 9	" 10 0	..	..
1899	18 6	" 24 0	..	..	10 9	" 11 6	..	..
1890	22 0	" 32 0	37 0	to 38 0	10 0	" 11 3	..	..
1891	19 6	" 27 0	from 30s. upwards.		not quoted.	..	..	..
1892	18 6	" 26 0	30 0	to 37 0	11 6	to 16 0	..	..
1893	25 6	" 31 0	38 0	" 42 0	15 3	" 17 6	..	..
1894	31 0	" 39 0	47 0	" 54 0	17 6	" 20 0	..	..
1895	23 0	" 30 0	44 0	" 45 0	15 0	" 17 0	..	..
1896	24 0	" 30 0	80 0	" 38 0	14 0	" 16 0	..	..
1897	16 0	" 21 6	not quoted.	..	not quoted.	..	..	..
1898	19 0	" 26 0	28 0	to 32 0	8 6	to 9 0	..	..
1899	18 0	" 26 6	not quoted.	..	8 6	" 10 0	..	..
1890	15 0	" 23 6	25 0	to 26 0	9 6	" 0 0	..	..
1891	20 0	" 26 6	30 0	" 34 6	12 0	" 15 0	..	..
1892	26 0	" 37 6	40 0	" 48 0	18 0	" 21 0	..	..
1893	17 0	" 18 0	34 0	" 40 0	9 0	" 12 0	..	..
1894	18 6	" 26 6	80 0	" 34 0	9 6	" 13 0	..	..
1895	25 0	" 32 0	84 6	" 86 0	12 6	" 16 0	..	..
1896	20 0	" 24 0	80 0	" 84 6	9 6	" 12 0	..	..
1897	20 9	" 26 0	28 0	" 80 0	10 0	" 12 0	..	..
1898	18 9	" 25 0	27 0	" 82 0	8 6	" 11 6	..	..
1899	15 0	" 17 0	prices very low.		7 0	" 0 0	..	..
1890	20 0	" 24 0	80 0	to 32 0	10 6	" 11 6	14 0	to 15 0
1891	17 0	" 21 0	27 0	" 30 0	5 0	" 9 6	12 0	" 13 0
1892	14 0	" 18 0	27 6	" 28 0	7 6	" 9 0	13 0	" 14 0
1893	18 0	" 18 0	26 0	" 28 0	6 6	" 8 6	11 6	" 12 6
1894	18 0	" 18 0	26 0	" 28 0	6 6	" 8 6	11 6	" 12 6
1895	12 0	" 17 0	22 6	" 26 0	6 0	" 8 0	11 6	" 12 0
1896	13 0	" 18 0	23 0	" 27 6	6 6	" 8 6	11 6	" 12 0
1897	14 0	" 22 0	23 0	" 28 0	7 0	" 9 0	11 6	" 13 0
1898	13 0	" 20 0	23 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1899	13 0	" 18 0	24 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1890	13 0	" 18 0	24 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1891	12 6	" 18 0	22 0	" 28 0	7 0	" 9 0	11 0	" 12 6
1892	12 0	" 18 0	20 0	" 28 0	7 0	" 8 6	10 6	" 12 0
1893	12 0	" 17 0	20 0	" 27 0	7 0	" 8 0	10 0	" 12 0
1894	12 0	" 16 0	20 0	" 26 0	7 0	" 8 0	10 0	" 12 0
1895	12 0	" 16 0	20 0	" 25 0	7 0	" 8 0	10 0	" 11 6
1896	11 0	" 15 0	19 0	" 24 0	7 0	" 8 0	10 0	" 11 6
1897	11 0	" 14 0	18 0	" 23 0	7 0	" 8 0	10 6	" 12 0
1898	10 0	" 13 0	16 0	" 20 0	7 0	" 8 0	10 0	" 11 6
1899	10 0	" 13 0	13 0	" 18 6	7 0	" 8 0	8 6	" 9 6
1900	9 9	" 12 0	13 0	" 18 6	6 9	" 7 9	8 0	" 9 6
1901	9 0	" 10 0	11 0	" 16 6	5 9	" 6 6	8 0	" 9 0
1902	9 0	" 10 0	11 6	" 17 0	6 0	" 6 6	8 6	" 9 6
1903	10 0	" 12 0	15 0	" 18 0	7 0	" 8 0	11 6	" 12 6
1904	15 0	" 17 0	20 0	" 21 0	9 0	" 10 0	14 0	" 15 0
1905	17 0	" 20 0	24 0	" 26 0	10 0	" 11 0	15 0	" 16 0
1906	18 0	" 21 0	27 0	" 28 6	11 6	" 13 0	16 0	" 17 6
1907	*	*	22 0	" 24 0	11 0	" 12 6	16 0	" 17 0
1908	*	*	16 0	" 18 0	†	†	8 0	" 8 6
1909	*	*	24 0	" 26 0	†	†	12 6	" 14 0
1910	*	*	25 0	" 30 0	†	†	13 0	" 14 6
1911	*	*	25 0	" 30 0	†	†	13 0	" 14 6
1912	*	*	24 0	" 29 0	†	†	14 0	" 15 0
1913	*	*	25 0	" 30 0	†	†	17 0	" 18 0

* No Cheviots smeared now.

† No Highlands smeared now.

GENERAL SHOW AT PAISLEY, 1913.

THE eighty-sixth Show of the Society was held at Paisley on Tuesday, 8th July, and three following days. This was the first occasion on which the Show was held in the county of Renfrew, previous Shows in this District having been held at Glasgow. The results of the Show appear to justify the departure.

The weather throughout was favourable, there being only slight showers on the second day of the Show. An excellent site, extending to about 45 acres, was provided in the St James' Park. The surface was level, but the subsoil being moss, considerable trouble might have been experienced if the weather had been wet.

The attendance of the public was unusually large, being only surpassed by the great shows held in Edinburgh. Their Highnesses the Duke and Duchess of Teck, who were the guests of Sir Hugh and Lady Mary Shaw-Stewart at Ardgowan, visited the showyard on Wednesday and Thursday, accompanied by a distinguished party of ladies and gentlemen, and by their presence, and the interest which they evinced in all that was to be seen at the Show, contributed largely to its success.

In addition to the site and a free supply of water, the town of Paisley gave a donation of £250. The counties in the Show district — the Counties of Argyll, Ayr, Bute, Lanark, and Renfrew — contributed handsomely by means of voluntary assessments, these contributions amounting to a sum of £895; and the Renfrewshire Agricultural Society gave a donation of £100.

The late Provost Muir Mackean of Paisley, by his own unaided efforts, collected a sum of about £3400, which was allocated in various ways to ensure the success of the Show. Two handsome gold cups, to be called the Paisley and the Renfrewshire Perpetual Gold Challenge Cups, valued at £300 and £250 respectively, were provided out of this fund, and handed over to the Society, along with funds of £600 and £500 to provide annually replicas in silver of these cups, to become the property of the winners in each year. Other amounts were allocated towards providing special and additional cups and prizes, improvements in the Showyard, &c.

The lamented death of Provost Muir Mackean, a few weeks before the Show, cast a shadow of sorrow over the proceedings, and on every hand sincere regret was expressed that he had not been spared to see the success of his efforts.

A balance of the Provost's Fund, amounting to about £400, remained unallocated at the time of his death, and was handed over to the Society by his executors. At the General Meeting of the Society on 7th January 1914 it was decided that out of this sum a donation of £100 be given to the Royal Scottish Agricultural Benevolent Institution, and £300 to the Renfrewshire Agricultural Society, in recognition of the services and in accordance with the wishes of the late Provost Muir Mackean.

The display of live stock throughout was both large and of high merit, and the exhibit of implements and machines was extensive and in every way creditable. Exhibitors in the latter department were generally agreed that an unusually large amount of business had been transacted during the Show.

The amount drawn in Entry Fees for stock and implements together was the largest in the history of the Society's Shows.

The Accounts of the Show exhibit a credit balance of £2526, 19s. 6d.

Statistics.

The following tables give the number of entries in the various sections :—

1. CATTLE.

Class.	SHORTHORN.	No. of Entries.
1. Aged bulls	8
2. Two-year-old bulls	10
3. One-year-old bulls	11
4. Cows of any age	4
Extra stock	1
5. Two-year-old heifers	6
6. One-year-old heifers	16
		— 56

ABERDEEN-ANGUS.

7. Aged bulls . . . . .	. . . . .	5
8. Two-year-old bulls . . . . .	. . . . .	3
9. One-year-old bulls . . . . .	. . . . .	11
10. Cows of any age . . . . .	. . . . .	9
11. Two-year-old heifers . . . . .	. . . . .	11
12. One-year-old heifers . . . . .	. . . . .	21
		— 65

GALLOWAY.

13. Aged bulls . . . . .	. . . . .	6
14. Two-year-old bulls . . . . .	. . . . .	3
15. One-year-old bulls . . . . .	. . . . .	8
16. Cows of any age . . . . .	. . . . .	9
17. Two-year-old heifers . . . . .	. . . . .	9
18. One-year-old heifers . . . . .	. . . . .	14
		— 49.

HIGHLAND.

19. Aged bulls	6
20. Two-year-old bulls	6
21. One-year-old bulls	10
22. Cows of any age	12
23. Three-year-old heifers	12
24. Two-year-old heifers	11
	— 57

AYRSHIRE.

25. Cows in milk, calved before 1910	14
26. Cows in milk, calved after 1st January 1910	22
27. Cows of any age, in calf, and due to calve within nine months after the Show	15
28. Heifers calved after 1st January 1910, in calf, and due to calve within three months of the date of the Show	10
29. Two-year-old heifers	12
30. One-year-old heifers	15
Derby Sweepstake, organised by Renfrewshire Agricultural Society (21)	
31. Aged bulls	8
32. Two-year-old bulls	9
33. One-year-old bulls	6
34. Bull, any age, the progeny of an Ayrshire cow having an authenticated milk-yield (9)	1
35. Heifer calved in 1911 or 1912, the progeny of an Ayrshire cow having an authenticated milk-yield (21)	8
36. (Special milk-yield class, three years old and upwards, drawn from) Classes 25 and 26, (16)	
	— 120

JERSEY.

37. Cows, any age	3
38. One-year-old heifers	4
	—

SHETLAND.

39. Cows, any age	7
40. One-year-old heifers	2
Extra stock	3
	— 12

BRITISH HOLSTEIN.

41. Cows in milk, calved in or before 1910	7
42. Heifers calved in 1911 or 1912	7
43. Bulls calved in or before 1910	4
44. Bulls calved in 1911 or 1912	6
	— 24

FAT CATTLE.

45. Two-year-old oxen, any pure breed or cross	5
46. One-year-old oxen, any pure breed or cross	3
47. Two-year-old heifers, any pure breed or cross	7
48. One-year-old heifers, any pure breed or cross	3
	— 18
	<u>408</u>

2. HORSES.

DRAUGHT STALLIONS.

49. Aged stallions	15
50. Three-year-old entire colts	19
51. Two-year-old entire colts	33
52. One-year-old entire colts	17
Derby Sweepstake, organised by Renfrewshire Agricultural Society (8)	— 84

DRAUGHT GELDINGS.

53. Aged geldings	8
Extra stock	1
54. Three-year-old geldings	6
55. Two-year-old geldings	9
	— 24

DRAUGHT MARES AND FILLIES.

56. Mares with foal at foot	8
57. Yeld mares, foaled before 1910	8
58. Three-year-old yeld mares, or fillies	6
59. Two-year-old fillies	14
60. One-year-old fillies	16
Derby Sweepstake, organised by Renfrewshire Agricultural Society (17)	— 52

HUNTERS.

61. Hunter brood mares, with foal at foot	10
62. Colts, geldings, or fillies, foaled in 1912, the produce of thoroughbred stallions or registered hunter sires, out of mares of any breed	14
63. Fillies, mares, or geldings, for field, foaled in 1911, the produce of thoroughbred stallions or registered hunter sires, out of mares of any breed	10
64. Yeld mares, fillies, or geldings, for field, foaled in 1910, the produce of thoroughbred stallions or registered hunter sires, out of mares of any breed	9
65. Mares or geldings foaled in 1909, able to carry 14 st. and over	4
66. Mares or geldings foaled in 1909, able to carry under 14 st.	7
67. Mares or geldings foaled before 1909, able to carry 14½ st. and upwards	9
68. Mares or geldings foaled before 1909, to carry 13 st. and under 14½ st.	21
69. Mares or geldings foaled before 1909, to carry under 13 st.	11
Extra stock	1
70. Mares or geldings, 4 years old and upwards, owned by subscribers to any recognised pack of hounds in Scotland, and which have been fairly ridden to hounds in any country during season 1912-1913 by their owners, to carry 14½ st. and upwards (7)	2
71. Mares or geldings, 4 years old and upwards, owned by subscribers to any recognised pack of hounds in Scotland, and which have been fairly ridden to hounds in any country during season 1912-1913 by their owners, to carry 13 st. and under 14½ st. (16)	1
72. Mares or geldings, 4 years old and upwards, owned by subscribers to any recognised pack of hounds in Scotland, and which have been fairly ridden to hounds in any country during season 1912-1913 by their owners, to carry under 13 st. (12)	4
73. Mares or geldings, 4 years old and upwards, owned by tenant farmers whose chief occupation is farming, and hunted by them with any established pack of fox-hounds in Scotland in the season 1912-1913 (6)	1
	— 104

HACKNYS.

74. Brood mares, 15 hands and upwards, with foal at foot, or to foal this season to a registered sire	5
75. Brood mares, under 15 hands, with foal at foot, or to foal this season to a registered sire	4
76. Yeld mares or fillies, three years old	4
77. Fillies foaled in 1911	6
78. Fillies foaled in 1912	8
79. Stallions foaled in or before 1910, over 15 hands	3
80. Stallions foaled in or before 1910, over 14 hands and not over 15 hands	2
81. Entire colts, foaled in 1911	5
82. Entire colts, foaled in 1912	6
	— 45

PONIES.

83. Stallions, 3 years old and upwards, 14 hands and under	1
84. Yeld mares, fillies, or geldings, 3 years old and upwards, over 13 and not over 14 hands	7
85. Yeld mares, fillies, or geldings, 3 years old and upwards, over 12 and not over 13 hands	5
86. Yeld mares, fillies, or geldings, 3 years old and upwards, 12 hands and under	2
	— 15

POLO PONIES.

87. Polo ponies. Class open to ponies which have been regularly played this season with any recognised polo club. Ponies to be tested for manners and handiness, as well as make and shape.

(CLASS ABANDONED.) 9
— 9

HIGHLAND PONIES.

88. Stallions of the heavy type, 3 years old or upwards, not exceeding 14.2 hands	3
Extra stock	3
89. Stallions of the light type, 3 years old or upwards, not exceeding 14.2 hands	6
Extra stock	1
90. Entire colts, foaled after 1st January 1911	13
91. Mares of the heavy type, 3 years old or upwards, not exceeding 14.2 hands, yeld or with foal at foot	10
92. Mares of the light type, 3 years old or upwards, not exceeding 14.2 hands, yeld or with foal at foot	6
93. Fillies foaled after 1st January 1911	5
	— 47

SHETLAND PONIES.

94. Stallions, not exceeding 10½ hands, foaled before 1910	9
Extra stock	1
95. Entire colts, not exceeding 10½ hands, foaled in 1910 or 1911	11
96. Mares, not exceeding 10½ hands, with foal at foot	11
97. Yeld mares, not exceeding 10½ hands	10
98. Fillies, not exceeding 10½ hands, foaled in 1910 or 1911	12
	— 54

HORSES IN HARNESS.

99. Mares or geldings, over 15 hands	4
Extra stock	1
100. Mares or geldings, over 14 and not exceeding 15 hands	11
101. Mares or geldings, 14 hands and under (10)	2
102. Pair mares or geldings, in double harness, any height (6)	1
103. Pair mares or geldings, driven tandem, any height (10) . . . . .	...
	— 19

DRAUGHT GELDINGS.

104. Draught geldings, any age, in harness (4)	2
	— 2

VAN HORSES.

105. Mares or geldings, 3 years old and upwards, shown in trade van	6
106. Milk turn-outs belonging to tenant farmers in the county of Renfrew	2
	— 8

ARMY REMOUNT CLASSES.

107. Mares or geldings suitable for artillery and transport purposes (8)	6
108. Mares or geldings suitable for cavalry of the line, able to carry about 16 st. (8)	5
	— 11
	<u>472</u>

JUMPING.

1. Horses or ponies, any height	21
2. Hunters, the property of subscribers to any recognised pack of hounds in Scotland	29
3. Polo ponies, serpentine bending test	} Cancelled.
Do. ball race	
4. Horses or ponies, any height—handicap	21
5. Horses or ponies, any height—handicap	20
	— 91

3. SHEEP.

BLACKFACE.

109. Tups above one shear	23
Extra stock	2
110. Shearling tups	40
111. Ewes above one shear, with lambs	22
112. Shearling ewes or gimmers	18
113. Shearling tups, clipped on or after 1st March 1913	15
114. Tup lambs	8
	— 128

CHEVIOT.

115. Tups above one shear	11
116. Shearling tups	14
117. Ewes above one shear, with lambs	8
118. Shearling ewes or gimmers	9
	— 42

BORDER LEICESTER.

119. Tups above one shear	6
Extra stock	2
120. Shearling tups	38
121. Ewes above one shear	12
122. Shearling ewes or gimmers	33
	— 91

HALF-BRED.

123. Tups above one shear	2
124. Shearling tups	6
125. Ewe above one shear	1
126. Shearling ewes or gimmers	4
	— 13

SHROPSHIRE.

127. Shearling tups	4
128. Shearling ewes or gimmers	4
	— 8

OXFORD DOWN.

129. Shearling tups	7
Extra stock	1
130. Shearling ewes or gimmers	5
	— 13

SUFFOLK.

131. Shearling tups	7
132. Shearling ewes or gimmers	10
Extra stock	1
133. Tup lambs	14
134. Three ewe lambs	5
	— 37

EXTRA SECTIONS.

135. Three fat lambs, any breed or cross	2
	— 2
	<u>334</u>

4. SWINE.

LARGE WHITE BREED.

136. Boars farrowed before 1912	4
Extra stock	1
137. Boars farrowed in 1912	4
138. Boars farrowed in 1913	7
139. Sows farrowed before 1912	5
140. Sows farrowed in 1912	7
141. Sows farrowed in 1913	8
	— 36

MIDDLE WHITE BREED.

142. Boar, any age	1
143. Boars farrowed in 1913	2
144. Sows, any age	2
145. Sows farrowed in 1913	2
	— 7

BERKSHIRE.

146. Boar, any age	1
147. Boar farrowed in 1913	1
148. Sow, any age	1
149. Sows farrowed in 1913	2
	— 5
	<u>48</u>

5. POULTRY.

1-98. Poultry	536
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6. DAIRY PRODUCE.

1. Powdered butter, not less than 7 lb.	19
2. Fresh butter, three 1-lb. rolls	20
3. Cheddar cheese, 56 lb. and upwards	28
4. Sweet-milk cheese, flat shape, white in colour, made according to the Dunlop or other method	4
5. Cheese, 14 lb. and under	24
	<u>95</u>

7. HORSE-SHOEING.

1. Farm or work horses	30
2. Harness horses	24
	<u>54</u>

ABSTRACT.

	No. of Entries.
1. Cattle	408
2. Horses	472
3. Sheep	334
4. Swine	48
5. Poultry	536
6. Dairy produce	95
7. Horse-shoeing	54
	<u>1947</u>

The following table gives a comparative view of the display of cattle, horses, sheep, swine, poultry, dairy produce, and implements, of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held in the Glasgow Show District:—

Year.	Cattle.	Horses.	Sheep.	Swine.	Poultry.	Dairy Produce.	Implements.	Premiums.	Drawings at Show.
1826 .	226	49	26	24	...	...	50	£186	£275
1828 .	314	42	26	42	7	...	30	277	400
1838 .	461	121	102	45	...	39	62	731	849
1844 .	558	210	166	57	27	277	357	1600	1892
1850 .	484	164	241	73	86	316	577	1359	1909
1857 .	415	240	298	89	143	234	610	1500	2415
1867 .	286	212	257	58	150	143	1344	1600	3005
1875 .	411	405	296	48	479	152	2220	2665	6231
1882 .	376	331	232	39	254	182	2622	2878	3249
1888 .	300	308	293	26	209	110	1606	2464	2187
1897 .	317	350	245	30	275	126	2227	2897	4392
1905 .	310	462	284	60	534	79	1875	3702	4473
1913 .	408	472	334	48	536	95	1968	5109	6428

A Comparison.

The following figures relating to some of the most successful Shows the Society has held will be perused with interest:—

	Cattle.	Horses.	Sheep.	Swine.	Poultry.	Total Live Stock.	Implements.	Premiums.	Drawings at Show.	Profit.
Glasgow, 1867 .	286	212	257	58	150	963	1344	£1600	£3,005	£1307
Edinburgh, 1869 .	310	212	340	22	239	1123	1900	1600	4,078	2067
Glasgow, 1875 .	411	405	296	48	479	1639	2220	2665	6,231	3316
Edinburgh, 1877 .	339	342	305	30	234	1250	2292	2714	6,734	3710
Edinburgh, 1884 .	580	453	493	35	253	1814	2282	4343	6,548	1855
Edinburgh, 1893 .	380	349	294	31	360	1414	2268	2600	4,918	2323
Aberdeen, 1894 .	314	324	184	34	365	1221	2532	2440	5,121	1678
Perth, 1896 .	292	258	204	20	374	1148	1945	2205	4,788	2511
Glasgow, 1897 .	317	350	245	30	275	1217	2227	2897	4,392	2021
Edinburgh, 1899 .	386	518	477	46	551	1978	2585	3844	10,285	3911
Stirling, 1900 .	321	288	369	28	457	1463	2095	2915	4,305	1078
Inverness, 1901 .	360	257	204	22	499	1340	1460	2806	2,485	99
Aberdeen, 1902 .	330	253	243	42	475	1343	1988	2796	4,413	1604
Perth, 1904 .	348	315	283	35	413	1394	1972	3058	4,993	1828
Glasgow, 1905 .	310	462	284	60	534	1750	1875	3702	4,473	1203
Peebles, 1906 .	253	258	291	40	438	1280	1658	3072	2,596	416
Edinburgh, 1907 .	363	464	352	58	605	1842	2140	3614	7,061	2309
Aberdeen, 1908 .	331	299	237	42	509	1418	1931	3045	4,596	1881
Stirling, 1909 .	330	355	249	54	539	1527	1977	3017	4,638	1100
Dumfries, 1910 .	270	355	295	54	481	1455	1950	3057	3,411	562
Paisley, 1913 .	408	472	334	48	536	1798	1968	5109	6,468	2527

Cattle.

The display of Shorthorns, in point of numbers, was about an average. The general quality of the exhibits was exceedingly good. In the class for aged bulls Mr John Gill, Thorn Farm, Stainton, Penrith, was first with "Montrave Ethling" 109,444, a bull of rare substance and style, bred by Sir John Gilmour, Bart., of Montrave. In the two-year-old and yearling classes there was a grand display. The winner of the former class was Mr George Campbell's "Woodend Stamp" 113,755, a beautiful dark roan, which also won the Tweeddale Gold Medal and the Special Prize of £20 offered by the Shorthorn Society for the best Shorthorn bull.

Cows and heifers were not numerous, but amongst the latter there were some animals of exceptional merit. The Championship of the breed went to the two-year-old heifer "Windsor Belle" (fig. 60), bred by, and the property of, His Majesty the King.

In the Aberdeen-Angus section there was a total of 65 entries, which may be regarded as a good average. In the matter of

general excellence they were above the average. As in the Shorthorn section, a female was awarded the supreme championship, the President's Medal going to Mr J. Ernest Kerr's "Pride of Silesia" 44,042 (fig. 61), a typical Aberdeen-Angus cow. This animal also secured the Ballindalloch Challenge Cup for the best cow—this cup being now won outright by Mr Kerr—and the Champion Gold Medal given by the Aberdeen-Angus Cattle Society for the best animal in the breeding classes. The Ballindalloch Challenge Cup for the best bull of the breed was awarded to "Elmhore" 29,122, owned by Viscount Allendale, Bywell Hall, Stocksfield-on-Tyne, and which was bred by His late Majesty King Edward VII.

The show of Galloways was, on the whole, an excellent one. The President's Champion Medal went to the first prize aged bull "Black Prince" 11,622 (fig. 62), the property of Mr Robert Graham, Auchengassel, Twynholm, which was also awarded the Dr Gillespie Memorial Challenge Trophy, value £50, for the best breeding animal.

There was a fair number of Highland Cattle exhibited. As usual, they formed an interesting feature of the Show. The President's Medal went to the Earl of Southesk, Kinnaired Castle, Brechin, for his splendid yellow heifer "Stella" (fig. 63), bred by the exhibitor.

In the Ayrshire section there was a magnificent show. The entries reached the record figure of 120, and it is safe to say that in this section the display was never excelled in the history of the Society's Shows. The President's Medal for the best animal of the breed went to Mr James Howie's two-year-old bull, "Howie's Sir Hugh" 9026 (fig. 64), bred by Sir Hugh Shaw Stewart, Bart., Ardgowan, Inverkip. This animal also won the Fife and Kinross Gold Challenge Cup for the best Ayrshire, and the Special Prize of £10 for the best animal of the Ayrshire breed given by the Ayrshire Cattle Herd-Book Society. The Special Prize of £10 given by the same Society for the best female of the breed was won by "Manswraes Nettie" 24,590, a five-year-old cow owned by Mr Robert Wilson, Manswraes, Bridge of Weir.

Jersey Cattle were a small class, the President's Medal going to Mr C. Randolph Dudgeon, Cargen Holm, Dumfries, for "Raleigh's Homestill" 12,457 (fig. 65).

Shetlanders, although more numerous, were also a small class. The Championship of the breed was awarded to Lady Gertrude Crawford, Coxhill, Lymington, Hants, for her five-year-old black-and-white cow "Olna" 219 (fig. 66).

Classes were provided for British Holstein Cattle for the first time. These were well filled, and included many typical animals. The President's Medal was awarded to 'Kirkhill

Count" 1559 (fig. 67), a fine yearling bull, the property of, and bred by, Mr William Sinclair, Kirkhill, Nigg, Kincardineshire.

There was a creditable show of fat cattle. The Championship went to Mr James W. H. Grant, Wester Elchies, Aberlour, for his Aberdeen-Angus heifer "Novena of Elchies" 48,969 (fig. 68).

Horses.

As was to be expected in the centre of the Clydesdale country, the display of Clydesdales has seldom been equalled in the history of the Society. All sections were well filled, and the male classes especially provided a splendid exhibition. The President's Champion Medal for the best stallion or colt went to "Baron's Seal" 17,097 (fig. 69), a two-year-old colt of remarkable all-round merit, shown by Messrs A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, bred by Mr J. P. Sleigh, St John's Wells, Fyvie, and got by "Baron's Pride" (9122) out of "Nellie of Fyvie" (20,364). This colt also won the Paisley Perpetual Gold Challenge Cup, value £300, for the best Clydesdale Stallion or Colt, and the breeder, Mr J. P. Sleigh, was awarded the William Taylor Memorial Prize of £10 and Certificate, given by the William Taylor Memorial Committee.

Draught Geldings made an excellent show. The President's Medal was secured by Mr Homer Young, Redhills, Dumfries, with his grey three-year-old "Satisfaction" (fig. 70), a horse of rare quality and style.

The classes for Clydesdale Mares and Fillies were also well supported, and many fine animals were shown. The Champion Medal, and also the Cawdor Challenge Cup, value 50 guineas, presented by the Clydesdale Horse Society, went to Mr J. Ernest Kerr of Harviestoun Castle, Dollar, for his noted three-year-old bay filly "Harviestoun Phyllis" (fig. 71).

The number of Hunters entered totalled 104, and seldom has a finer display of these been seen at the Society's Show. The President's Medal was won by Mr John Drage, Chapel Brampton, Northampton, with his well-known five-year-old gelding "Bridge" (fig. 72). Other important awards were the Champion Gold Medal, given by the Hunters' Improvement Society, won by Mr James Cairns' filly "Ella" (4143), and a Silver Cup, value £50, presented by the Dowager Lady Smiley, won by Mr Alexander Cross of Knockdon, with his fine gelding "Laidlaw."

There was also a fine display of Hackneys. Mr Robert Scott, Thornhome, Carlisle, got the President's Champion Medal for his noted six-year-old "Flash Mathias" 11,426 (fig. 73), and the Champion Gold Medal, or Prize of £10, offered by the Hackney Horse Society for the best mare or filly in the Hackney

or Pony classes, was awarded to Mr John Makeague's brood-mare "Pious Bonds" (16,103).

In the classes for Ponies Mr Hugh Leggat's mare "Arthurlie Golden Promise" 22,376 (fig. 74) won the President's Medal.

The display of Highland Ponies was undoubtedly the best that has ever been seen at the Society's Show. All the classes were well filled, and the quality of the exhibits was exceptional. The President's Medal was awarded to His Grace the Duke of Atholl, K.T., for his beautiful first-prize mare "Lady Louise" 1530 (fig. 75).

Shetland Ponies made, as usual, an interesting display, Mr William Mungall of Transy securing the President's Medal with "Selwood of Transy" 619 (fig. 76).

The Harness classes provided an interesting spectacular display. The Champion Medal was won by Mr H. le Marchant, Elmwood, East Croydon, Surrey, with his famous eight-year-old gelding "Gaythorn" (fig. 77).

The classes for Horses in Cart or Lorry, Van Horses, Milk Turn-out, and Army Remounts were disappointing as regards the number of entries. The names of the winners will be found in the Prize-List, pp. 377, 378.

Sheep.

The entries of Sheep were unusually numerous, especially in the Blackface and Border-Leicester classes, and the quality over all was excellent. The winners of the President's Champion Medals are shown in figs. 78, 79, 80, 81, 82, 83, and 84. The Renfrewshire Perpetual Gold Challenge Cup, value £250, which was offered for the best animal of the Blackface breed, was won by Mr M. G. Hamilton, Woolforde, Cobbinshaw.

Swine.

There was a good show of Swine, the Large Whites predominating. The President's Medal for the best animal went to Mr R. E. W. Stephenson, Tue Brook, Liverpool, for his aged sow "Tallington Companion" 29,914 (fig. 85), bred by Mr W. E. Measures, Tallington, Stamford.

In the classes for Dairy Produce and Poultry there was an exceptionally large and good display.

The Horse-Shoeing Competition was well supported, and, as usual, attracted much interest on the part of a large number of those present at the Show.



Fig. 60.—SHORTHORN HEIFER, "WINDSOR BELLE."

Winner of the President's Medal for best Shorthorn, Paisley Show, 1913. Bred by and the property of His Majesty the King, The Royal Farms, Windsor. Age two years five months and twenty-eight days.

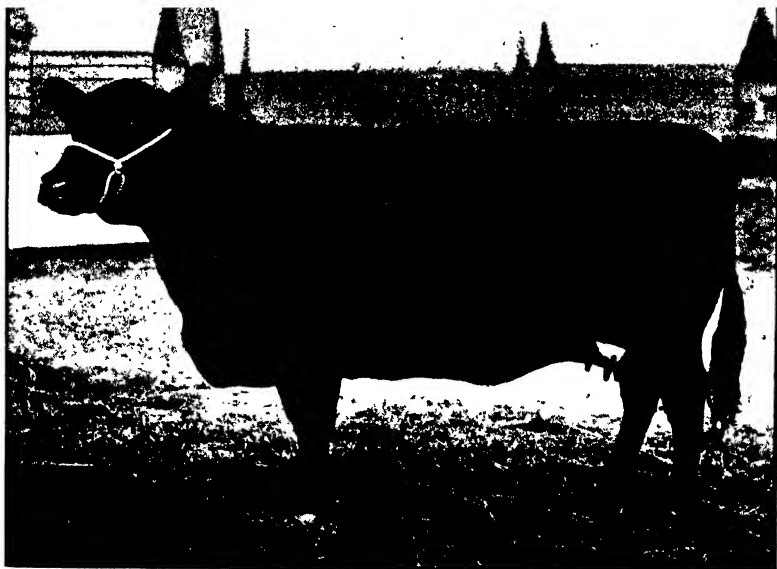


Fig. 61.—ABERDEEN-ANGUS COW, "PRIDE OF SILESIA" 44,042.

Winner of the President's Medal for best Aberdeen-Angus animal, Paisley Show, 1913. Bred by and the property of Mr J. Ernest Kerr of Harviestoun Castle, Dollar. Age five years.

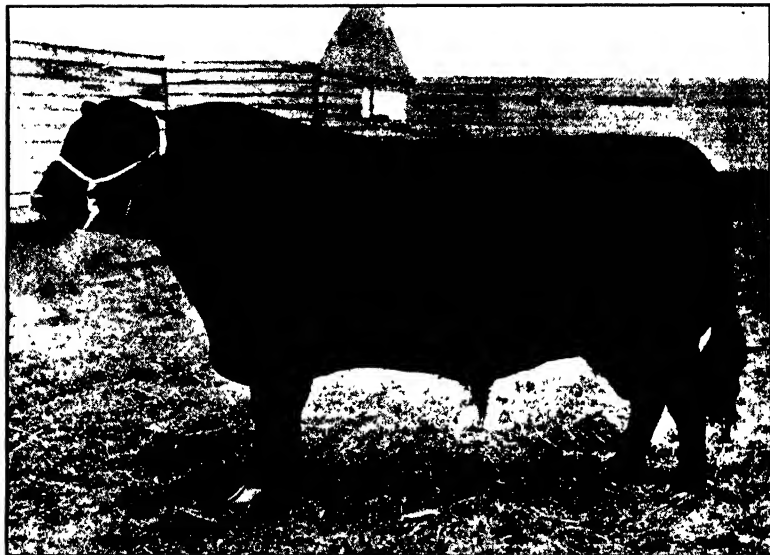


Fig. 62.—GALLOWAY BULL, "BLACK PRINCE" 11,622.

Winner of the President's Medal for best Galloway, Paisley Show, 1913. The property of Mr Robert Graham, Auchengassel, Twynholm. Bred by Mr H. C. Stephens, Cholderton Lodge, Salisbury. Age four years and five months.



Fig. 63.—HIGHLAND HEIFER, "STELLA."

Winner of the President's Medal for best Highland animal, Paisley Show, 1913. Bred by and the property of The Earl of Southesk, Kinnaird Castle, Brechin. Age three years five months and eight days.



Fig. 64.—AYRSHIRE BULL, "HOWIE'S SIR HUGH" 9026.

Winner of the President's Medal for best Ayrshire, Paisley Show, 1913. The property of Mr James Howie, Hillhouse, Kilmarnock. Bred by Sir H. Shaw Stewart, Bart., Ardgowan, Inverkip. Age two years and five months.



Fig. 65.—JERSEY COW, "RALEIGH'S HOMESTILL" 12,457 H.C.

Winner of the President's Medal for best Jersey animal, Paisley Show, 1913. The property of Mr C. Randolph Dudgeon, Cargen Holm, Dumfries. Bred by Mr R. Le Rout, St Mary's, Jersey. Age eight years three months and five days.

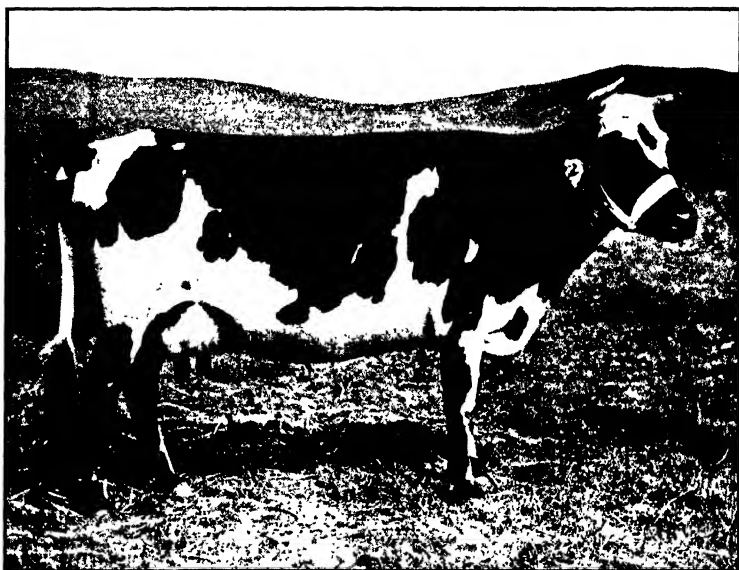


Fig. 66.—SHETLAND COW, "OLNA."

Winner of the President's Medal for best Shetland animal, Paisley Show, 1913. The property of Lady Gertrude Crawford, Coxhill, Lynton, Hants. Age five years.

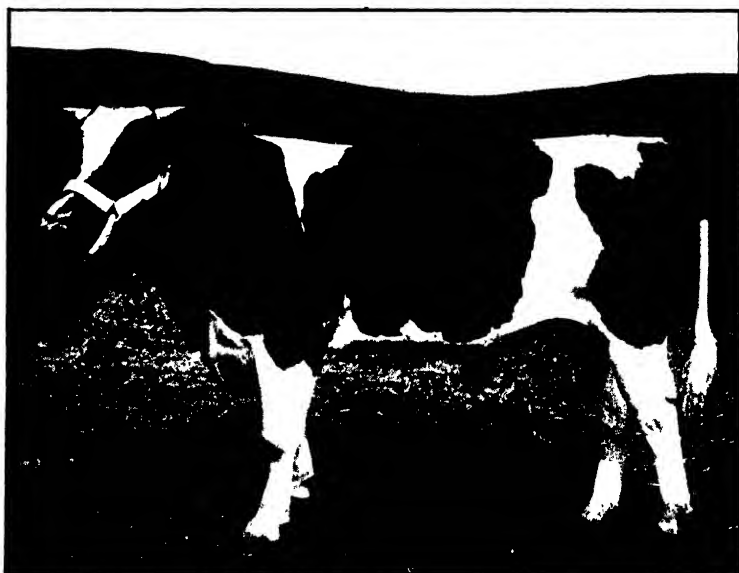


Fig. 67.—BRITISH HOLSTEIN BULL, "KIRK HILL COUNT" 1559.

Winner of the President's Medal for best British Holstein animal, Paisley Show, 1913. Bred by and the property of Mr William Sinclair, Kirkhill, Nigg, Kincardineshire. Age one year two months and eighteen days.

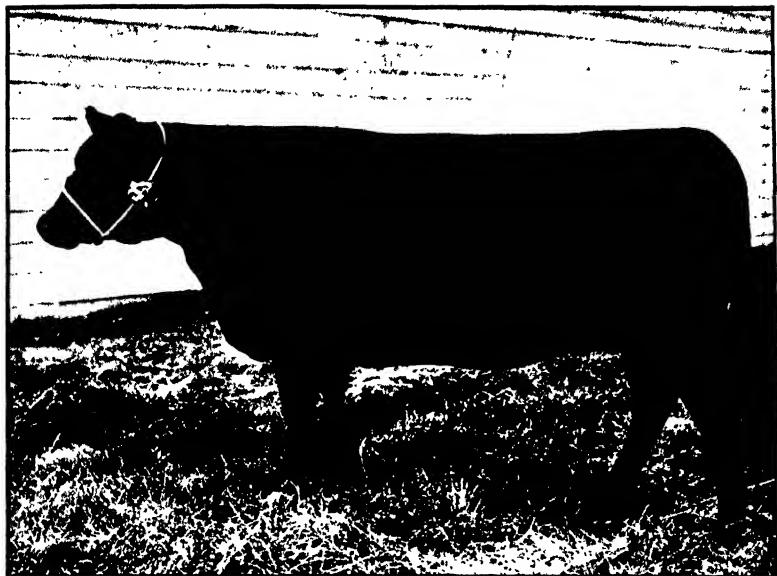


Fig. 68.—**ABERDEEN-ANGUS HEIFER**, "NOVENA OF ELCHIES" 48,969.

Winner of the President's Medal for best Fat Animal, Paisley Show, 1913. Bred by and the property of Mr James W. H. Grant, Wester Elchies, Aberlour. Age two years and seven months.



Fig. 69.—**CLYDESDALE COLT**, "BARON'S SEAL" 17,097.

Winner of the President's Medal for best Clydesdale Stallion or Colt, Paisley Show, 1913. The property of Messrs A. & W. Montgomery, Netherhall and Banks, Kirkcudbright. Bred by Mr J. P. Sleigh, St John's Wells, Fyvie. Age two years and one month.

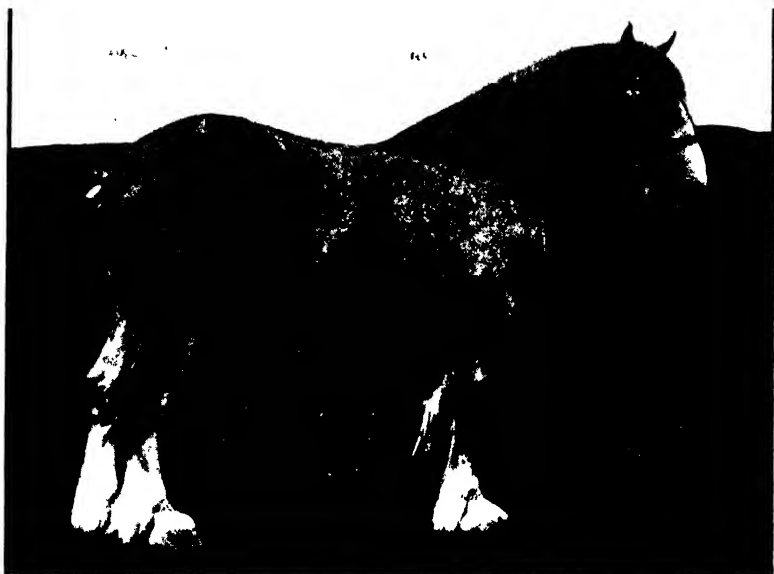


Fig. 70.—DRAUGHT GELDING, "SATISFACTION."

Winner of the President's Medal for best Draught Gelding, Paisley Show, 1913. The property of Mr Homer Young, Redhills, Dumfries. Bred by Mr John Young, Brockloch, Dalbeattie. Age three years.

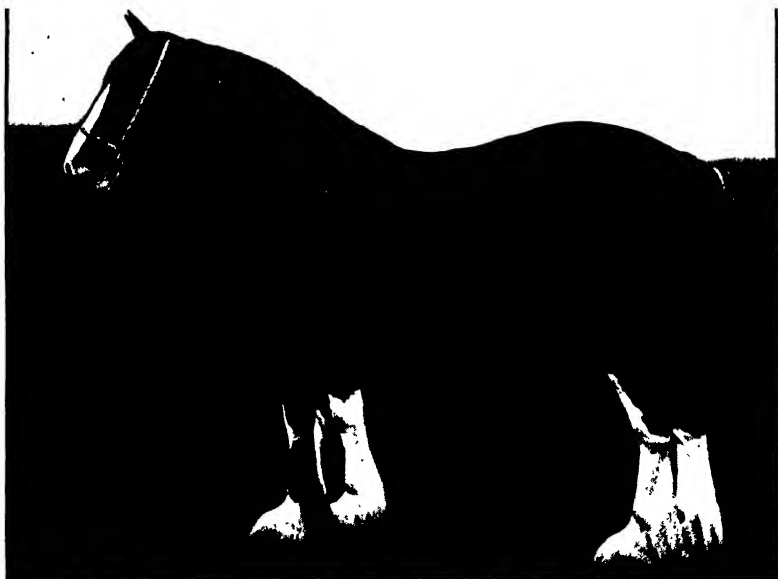


Fig. 71.—CLYDESDALE FILLY, "HARVIESTOUN PHYLLIS."

Winner of the President's Medal for best Clydesdale Mare or Filly, Paisley Show, 1913. Bred by and the property of Mr J. Ernest Kerr of Harviestoun Castle, Dollar. Age three years.



Fig. 72.—HUNTER GELDING, "BRIDGE."

Winner of the President's Medal for best Hunter, Paisley Show, 1913. The property of Mr. John Drage, Chapel Brampton Northampton. Age five years.

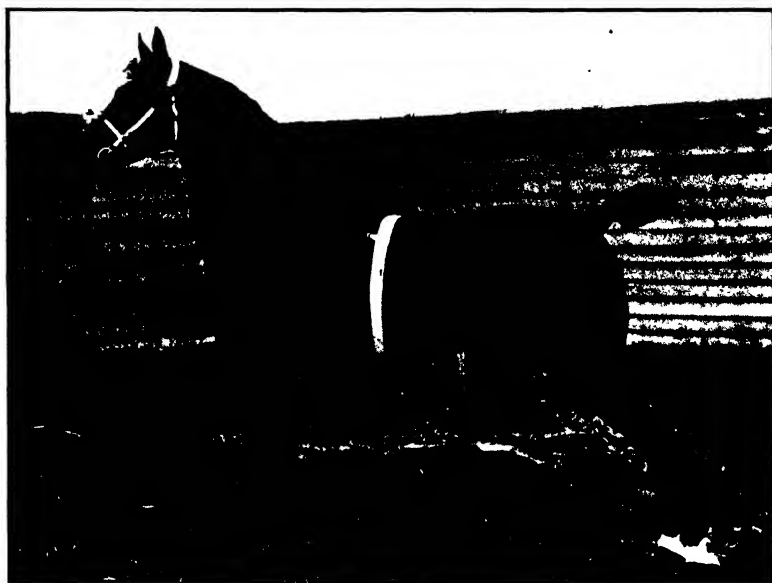


Fig. 73.—HACKNEY STALLION, "FLASH MATHIAS" 11,426.

Winner of the President's Medal for best Hackney, Paisley Show, 1913. The property of Mr. Robert Scott, Thornhome, Carlisle. Bred by Mr R. C. Marshall, Burntsields, Kilbarchan. Age six years.



Fig. 74.—PONY MARE, "ARTHURLIE GOLDEN PROMISE" 22,376.

Winner of the President's Medal for best Pony, Paisley Show, 1913. The property of Mr Hugh Leggat, Cross Arthurlie House, Barrhead. Bred by Mr Alexander Morton, Gowanbank, Darvel. Age five years.



Fig. 75.—HIGHLAND PONY MARE, "LADY LOUISE" 1530.

Winner of the President's Medal for best Highland Pony, Paisley Show, 1913. The property of The Duke of Atholl, K.T., Blair Castle, Blair Atholl. Bred by Mr Grant, Beaully. Aged.

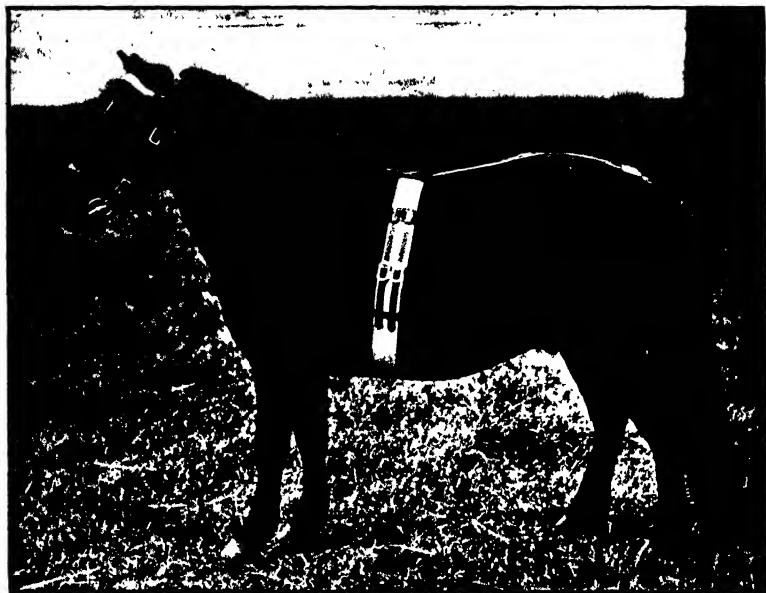


Fig. 76.—SHETLAND PONY STALLION, "SELWOOD OF TRANSY" 619.

Winner of the President's Medal for best Shetland Pony, Paisley Show, 1913. Bred by and the property of Mr William Mungall of Transy, Dunfermline. Age five years two months and nine days.

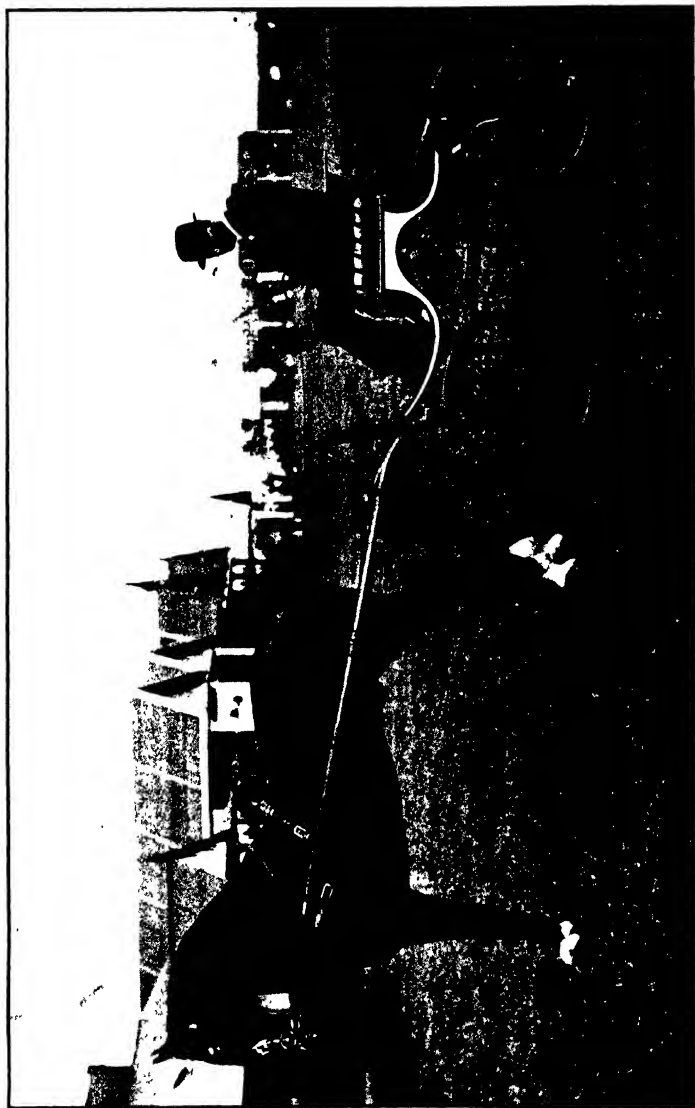


Fig. 77.—HACKNEY GELDING IN HARNESS, "GAYTHORN."

Winner of the President's Medal for best animal in Classes for Horses in Harness, Pauley Show, 1913. The property of Mr H. Le Marchant, Elinwood, East Croydon, Surrey. Bred by Mr James Prentice, Catolside, Uddingston. Age eight years.

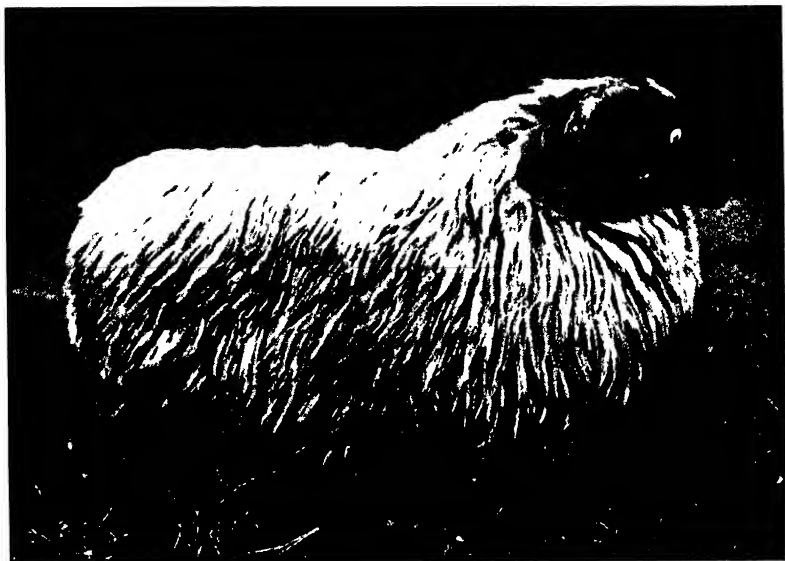


Fig. 78.—BLACKFACE TUP.

Winner of the President's Medal for best Blackface Sheep, Paisley Show, 1913. Bred by and the property of Mr M. G. Hamilton, Woolfords, Cobbinshaw.



Fig. 79.—CHEVIOT EWE.

Winner of the President's Medal for best Cheviot Sheep, Paisley Show, 1913. Bred by and the property of Mr John Elliot, Hindhope, Jedburgh.



Fig. 80.—BORDER LEICESTER TUP, "WILD SIR MATTHEW" 3453.

Winner of the President's Medal for best Border Leicester, Paisley Show, 1913. The property of Mr J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Topp, Scremerston, Berwick-on-Tweed. Bred by Messrs T. & M. Templeton, Sandyknowe, Kelso.



Fig. 81.—HALF-BRED SHEARLING TUP.

Winner of the President's Medal for best Half-Bred, Paisley Show, 1913. The property of Mr John Mark, Sunnyside, Prestonkirk. Bred by Mr John Stewart, Stoneypath, Prestonkirk.



Fig. 82.—SHROPSHIRE SHEARLING GIMMER.

Winner of the President's Medal for best Shropshire, Paisley Show, 1913. Bred by and the property of Mr Thomas A. Buttar, Corston, Coupar-Angus.



Fig. 83.—OXFORD-DOWN SHEARLING TUP.

Winner of the President's Medal for best Oxford-Down, Paisley Show, 1913. Bred by and the property of the Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.

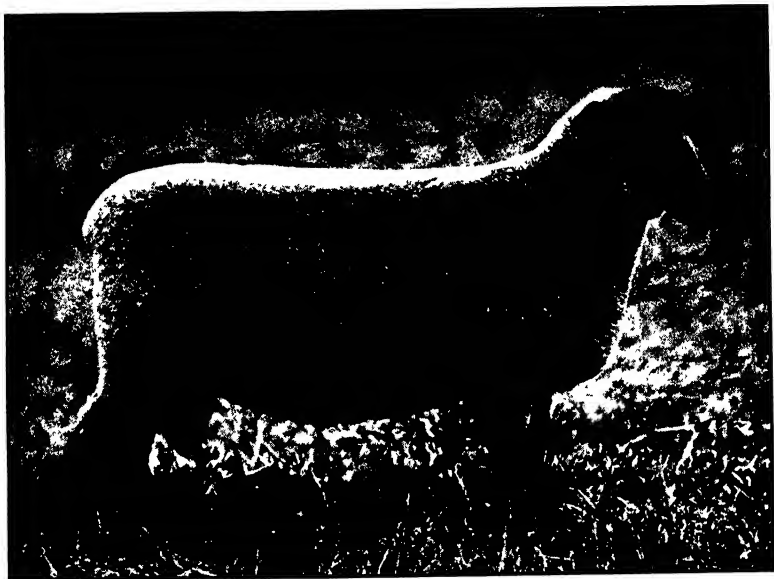


Fig. 81.—SUFFOLK TUP LAMB, "ALVES EARL 3RD."

Winner of the President's Medal for best Suffolk Sheep, Paisley Show, 1913. Bred by and the property of Mr Allan Grant, Wester Alves, Alves, Forres.

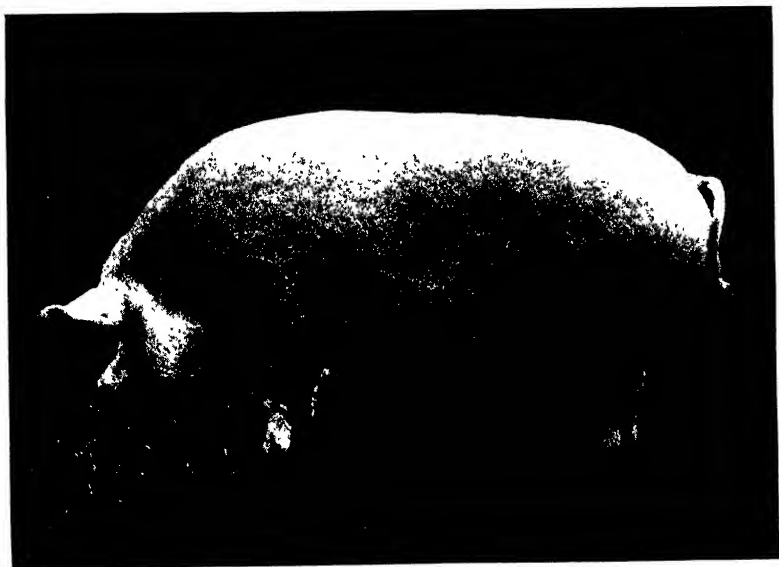


Fig. 85.—LARGE WHITE SOW, "TALLINGTON COMPANION" 29,914.

Winner of the President's Medal for best pen of Swine, Paisley Show, 1913. The property of Mr R. E. W. Stephenson, The Brook, Liverpool. Bred by Mr W. E. Measures, Tallington, Stamford. Age four years four months and twenty-seven days.

PREMIUMS AWARDED BY THE SOCIETY IN 1913.

I.—PAISLEY SHOW

8th, 9th, 10th, and 11th July 1913.

ABBREVIATIONS.—V., *Very Highly Commended.* H., *Highly Commended*
C., *Commended.*

CATTLE

SHORTHORN.

PRESIDENT'S CHAMPION MEDAL for best Shorthorn.

No. 35 His Majesty the King, The Royal Farms, Windsor, "Windsor Belle."

Tweeddale Gold Medal for best Shorthorn Bull.

No. 10 George Campbell, Harthill, Bieldside, Aberdeen, "Woodend Stamp"
(113,755).

Silver Medal to the Breeder of best Shorthorn.

No. 35 His Majesty the King, The Royal Farms, Windsor.

*Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—
£20, given by the Shorthorn Society.*

No. 10 George Campbell, Harthill, Bieldside, Aberdeen, "Woodend Stamp"
(113,755).

*Best Group of Four Shorthorns. The group must include one Bull, but not more than
two.—Prizes, £10 and £5, contributed from the late Provost Muir MacKean's
Fund.*

1st Messrs Law, Mains of Sanguhar, Forres—Nos. 17, 28, 33, 51.

2nd George Harrison, Gainford Hall, Darlington—Nos. 4, 37, 27, 49.

Breeder of best Bull of any age in Classes 1, 2, and 3—The Silver Medal.

No. 10 Alexander Crombie, Woodend, New Machar.

CLASS 1. BULL, calved before 1911.—Premiums, £15, £10, £5, and £3.

- 1st No. 3 John Gill, Thorn Farm, Stainton, Penrith, "Montrave Ethling" (109,444).
 2nd No. 4 George Harrison, Gainford Hall, Darlington, "Prince Olaf 2nd" (103,410).
 3rd No. 6 William T. Malcolm, Dunmore, Larbert, "Marmion" (109,333).
 4th No. 5 William T. Malcolm, Dunmore, Larbert, "Gunthorpe Beau" (108,822).
 V No. 7 The Earl of Moray, Doune Lodge, Doune, "Burnhall Marquis" (104,935).
 C No. 1 The Duke of Argyll, Inveraray Castle, "Marquis of Rothes" (106,156).

CLASS 2. BULL, calved in 1911.—Premiums, £15, £10, £5, and £3.

- 1st No. 10 George Campbell, Harthill, Bieldside, Aberdeen, "Woodend Stamp" (113,755).
 2nd No. 17 Messrs Law, Mains of Sanquhar, Forres, "Sanquhar Dreadnought" (113,244).
 3rd No. 9 His Majesty the King, The Royal Farms, Windsor, "Proud Warrior" (112,930).
 4th No. 18 Andrew M'Connachie, Baley, Portsoy, "Linksfeld Baron" (112,292).
 V No. 11 James Carnegie, Aytonhill, Newburgh, "Proud Ross" (112,927).
 H No. 12 Lady Cathcart, Cluny Castle, Aberdeen, "Edgcote Jester" (111,677).
 C No. 15 A. G. Maxtone Graham, Redgorton, Perth, "Crocus King" (111,427).

CLASS 3. BULL, calved in 1912.—Premiums, £12, £8, £4, and £2.

- 1st No. 22 Edgcote Shorthorn Co., Ltd., Edgcote, Banbury, Northants, "Edgcote Masterpiece."
 2nd No. 25 James Douglas Fletcher of Rosehaugh, Avoch, Ross-shire, "Rosehaugh."
 3rd No. 28 Messrs Law, Mains of Sanquhar, Forres, "Sanquhar Eclipse."
 4th No. 27 George Harrison, Gainford Hall, Darlington, "Gainford Champion."
 V No. 20 George Dickson, Milecross, Newtownards, Co. Down, "Droagh Cavalier."
 H No. 29 The Duke of Richmond and Gordon, K.G., Gordon Castle, Fochabers, "Harold."
 C No. 21 George Dickson, Milecross, Newtownards, "Milecross Hawlmark."

Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

- No. 35 His Majesty the King, The Royal Farms, Windsor, "Windsor Belle."

CLASS 4. COW, of any age, in Milk.—Premiums, £12, £8, £4, and £2.

- 1st No. 31 George Dickson, Milecross, Newtownards, "Artful Gwynne."
 2nd No. 30 W. M. Cazalet, Fairlawne, Tonbridge, "Clipper Keepsake."
 3rd No. 32 George Harrison, Gainford Hall, Darlington, "Ruth of Gainford."
 4th No. 33 William T. Malcolm, Dunmore, Larbert, "Maria."

EXTRA STOCK.

The following was Very Highly Commended, and a Medium Silver Medal awarded :—

- No. 34 A. G. Maxtone Graham, Redgorton, Perth, "Belle of Lincoln."

CLASS 5. HEIFER, calved in 1911.—Premiums, £10, £5, £3, and £2.

- 1st No. 35 His Majesty the King, The Royal Farms, Windsor, "Windsor Belle."
 2nd No. 37 George Harrison, Gainford Hall, Darlington, "Gainford Vivandiere."
 3rd No. 38 Messrs Law, Mains of Sanquhar, Forres, "Bellona 10th."
 4th No. 39 William T. Malcolm, Dunmore, Larbert, "Dunmore Helen."

CLASS 6. HEIFER, calved in 1912.—Premiums, £10, £5, £3, and £2.

- 1st No. 43 W. M. Cazalet, Fairlawne, Tonbridge, "Gipsy Countess 3rd."
 2nd No. 49 George Harrison, Gainford Hall, Darlington, "Gainford Rosemary."
 3rd No. 42 C. M. Cameron, Balnakyle, Munlochy, "Myrtles 3rd of Balnakyle."
 4th No. 41 His Majesty the King, The Royal Farms, Windsor, "Golden Bud."
 V No. 46 Edgcote Shorthorn Co., Ltd., Edgcote, Banbury, Northants, "Edgcote Storm Fairy."
 H No. 52 William T. Malcolm, Dunmore, Larbert, "Gainford Duchess 5th."
 C No. 44 W. & R. Connon, Nether Coullie, Kemnay, "Rose of Fortune 5th."
 C No. 47 A. G. Maxtone Graham, Redgorton, Perth, "Daffodil 26th."
 C No. 54 Stephen Mitchell, Boquhan, Kippen Station, Stirlingshire, "Boquhan Pure Gold."
 C No. 55 The Earl of Moray, Doune Lodge, Doune, "Doune Rachel IV."

ABERDEEN-ANGUS.*PRESIDENT'S CHAMPION MEDAL for best Aberdeen-Angus Animal.*

- No. 84. J. Ernest Kerr, Harviestoun Castle, Dollar, "Pride of Silesia" (44,042).

Silver Medal to the Breeder of best Aberdeen-Angus.

- No. 84 J. Ernest Kerr, Harviestoun Castle, Dollar.

Best Bull of any age in Classes 7, 8, and 9—Ballindalloch Challenge Cup, value £50, given by the late Sir George Macpherson-Grant, Bart.

- No. 57 Viscount Allendale, Bywell Hall, Stocksfield-on-Tyne, "Elmhore" (29,122).

Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

- No. 57 His late Majesty King Edward VII., Abergeldie Mains, Ballater.

Best Group of Four Aberdeen-Angus Animals. The group must include one Bull, but not more than two.—Prizes, £10 and £5, contributed from the late Provost Muir MacKean's Fund.

- 1st J. Ernest Kerr, Harviestoun Castle, Dollar.
 2nd John Joseph Cridlan, Maisemore Park, Gloucester.

Champion Gold Medal, value £10, for best Animal in the Breeding Classes, Breeding Animals shown as "Extra Stock" being eligible to compete, given by the Aberdeen-Angus Cattle Society.

- No. 84. J. Ernest Kerr, Harviestoun Castle, Dollar "Pride of Silesia" (44,042).

Breeder of best Bull of any age in Classes 7, 8, and 9—The Silver Medal.

- No. 57 His late Majesty King Edward VII., Abergeldie Mains, Ballater.

CLASS 7. BULL, calved before 1st December 1910.—Premiums, £15, £10, £5, and £3.

- 1st No. 57 Viscount Allendale, Bywell Hall, Stocksfield-on-Tyne, "Elmhore" (29,122).
 2nd No. 60 David P. Elliot, Nisbet Hill, Duns, "Black Jachin of Ballindalloch" (30,192).
 3rd No. 61 Peter D. Robertson, Castlecraig, Nigg, Ross-shire, "Glorious of Eshott" (30,617).
 4th No. 59 Garden A. Duff of Hatton Castle, Turriff, "Ephod of Ballindalloch" (27,979).
 V No. 58 Andrew Brooks, North Elphinstone, Tranent, "Periodical of Glamis" (23,457).

CLASS 8. BULL, calved on or after 1st December 1910.—
 Premiums, £15, £10, £5, and £3.

- 1st No. 63 John Joseph Cridlan, Maisemore Park, Gloucester, "Everard 2nd of Maisemore" (31,730).
 2nd No. 68 John M^cG. Petrie, Glenlogie, Forbes, Alford, "Bewitcher" (31,474).
 3rd No. 65 John Ritchie Findlay of Aberlour, Aberlour, "Jan Eric" (32,052).
 4th No. 62 John M. Allan, Easter Duthel, Carr Bridge, Strathspey, Inverness-shire, "British Mint" (31,518).
 V No. 67 Sir John Macpherson Grant of Ballindalloch, Bart., Ballindalloch Castle, Ballindalloch, "Evening Editor of Ballindalloch" (31,882).
 H No. 64 David Cross, Ingliston, Bishopton, "Katsura" (32,098).

CLASS 9. BULL, calved on or after 1st December 1911.—
 Premiums, £12, £8, £4, and £2.

- 1st No. 75 Sir John Macpherson-Grant of Ballindalloch, Bart., Ballindalloch, "Eris of Harviestoun" (33,097).
 2nd No. 76 Sir John Macpherson-Grant of Ballindalloch, Bart., Ballindalloch, "Elymore of Ballindalloch" (33,005).
 3rd No. 74 J. Ernest Kerr, Harviestoun Castle, Dollar, "Barbarian of Bleaton" (32,739).
 4th No. 70 Andrew Brooks, North Elphinstone, Tranent, "Ermacke" (33,098).
 V No. 80 William P. Turner, Cairnton of Boyndie, Portsoy, "Lancer of Towie-more."
 H No. 78 James M^cL. Marshall, Bleaton, Blairgowrie, "Princess of Bleaton" (33,726).
 C No. 79 John Stewart-Clark, Dundas Castle, South Queensferry, "Expert 2 of Dundas" (43,196).

Best Cow of any age in Class 10—Ballindalloch Challenge Cup, value £50, given by the late Mr C. Macpherson Grant of Drumduan.

- No. 84 J. Ernest Kerr, Harviestoun Castle, Dollar, "Pride of Silesia" (44,042).

Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

- No. 84 J. Ernest Kerr, Harviestoun Castle, Dollar.

CLASS 10. COW, of any age, in Milk.—Premiums, £12, £8, £4, and £2.

- 1st No. 84 J. Ernest Kerr, Harviestoun Castle, Dollar, "Pride of Silesia" (44,042).
 2nd No. 87 Charles Penny, Skillymarno, Strichen, "Pride of Pravia" (47,429).
 3rd No. 85 J. Ernest Kerr, Harviestoun Castle, Dollar, "Juanessa Erica" (47,425).
 4th No. 83 John Joseph Cridlan, Maisemore Park, Gloucester, "Tulip of Standen" (45,122).
 V No. 86 James M^cL. Marshall, Bleaton, Blairgowrie, "Princess Bra" (40,758).
 H No. 81 David R. Arnot, The Mains, Edzell, "Pooh-Bah" (43,257).
 C No. 82 George Cran, Morlich, Glenkindie, Aberdeen, "Elcona of Morlich" (45,150).

CLASS 11. HEIFER, calved on or after 1st December 1910.—
 Premiums, £10, £5, £3, and £2.

- 1st No. 95 J. Ernest Kerr, Harviestoun Castle, Dollar, "Pride of Palermo" (49,178).
 2nd No. 94 James Kennedy of Doonholm, Ayr, "Ernia" (49,156).
 3rd No. 100 Walter Wilson, Inchgower, Buckie, "Lovely Lady" (49,944).
 4th No. 93 Garden A. Duff of Hatton Castle, Turriff, "Daffodil Duchess 34th" (48,689).
 V No. 99 Peter D. Robertson, Castlecraig, Nigg, Ross-shire, "Miss Grace of Eshott" (48,319).
 H No. 96 J. Ernest Kerr of Harviestoun Castle, Dollar, "Pride of Madeira" (49,176).
 C No. 90 David R. Arnot, The Mains, Edzell, "Vesta of Edzell" (48,310).

CLASS 12. HEIFER, calved on or after 1st December 1911.—
Premiums, £10, £5, £3, and £2.

- 1st No. 105 John Joseph Cridlan, Maisemore Park, Gloucester, "Estelle of Maisemore" (50,414).
 2nd No. 120 The Earl of Strathmore, Glamis Castle, Glamis, "Belleric of Glamis" (51,526).
 3rd No. 118 Peter D. Robertson, Castlecraig, Nigg, Ross-shire, "Jingle of Castlecraig" (51,368).
 4th No. 110 James Kennedy of Doonholm, Ayr, "Papyra" (50,994).
 V No. 115 James M'L. Marshall of Bleaton, Blairgowrie, "Kindness of Bleaton" (51,176).
 H No. 106 Garden A. Duff of Hatton Castle, Turriff, "Pride of Hatton 13th" (40,488).
 C No. 102 David R. Arnot, The Mains, Edzell, "Viyella" (50,086).
 C No. 109 James Kennedy of Doonholm, Ayr, "Inca" (50,991).

GALLOWAY.

PRESIDENT'S CHAMPION MEDAL for best Galloway.

- No. 127 Robert Graham, Auchengassel, Twynholm, "Black Prince" (11,622).

Silver Medal to the Breeder of best Galloway.

- No. 127 H. C. Stephens, Choldeston Lodge, Salisbury.

Best Group of Four Galloway Animals. The group must include one Bull, but not more than two.—Prizes £10 and £5, contributed from the late Provost Muir MacKean's Fund.

- 1st Robert Graham, Auchengassel, Twynholm.
 2nd Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, Cumberland.

Breeder of best Bull of any age in Classes 13, 14, and 15—The Silver Medal.

- No. 127 H. C. Stephens, Choldeston Lodge, Salisbury.

Dr Gillespie Memorial Challenge Trophy, value £50, for best Galloway Animal registered in the Galloway Herd-Book, entered in any of the Breeding Classes, Breeding Animals shown as "Extra Stock" being eligible to compete, given by the Galloway Cattle Society of Great Britain and Ireland.

- No. 127 Robert Graham, Auchengassel, Twynholm, "Black Prince" (11,622).

CLASS 13. BULL, calved before 1st December 1910.—
Premiums, £15, £10, £5, and £3.

- 1st No. 127 Robert Graham, Auchengassel, Twynholm, "Black Prince" (11,622).
 2nd No. 122 Thomas Biggar & Sons, Chapelton, Dalbeattie, "Cæsar" (10,697).
 3rd No. 126 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, Cumberland, "Gordon of Blackcombe" (10,775).
 4th No. 124 Sir Robert William Buchanan-Jardine of Castlemilk, Bart., Lockerbie, "Archer V. of Castlemilk" (11,010).
 C No. 123 The Duke of Buccleuch and Queensberry, K.G., K.T., Drumlanrig Castle, Thornhill, Dumfriesshire, "Matador" (10,831).

CLASS 14. BULL, calved on or after 1st December 1910.—
Premiums, £15, £10, £5, and £3.

- 1st No. 129 Robert Graham, Auchengassel, Twynholm, "Wanderer" (11,505).
 2nd No. 130 James Wilson, Tundergarth Mais, Lockerbie, "Ingram" (11,358).
 3rd No. 128 W. B. Donaldson, Dunkyan, Killearn, "Cuthbert" (11,450).

CLASS 15. BULL, calved on or after 1st December 1911.—
 Premiums, £12, £8, £4, and £2.

- 1st No. 136 Robert Graham, Auchengassel, Twynholm, "Jack of Blackcombe" (11,709).
 2nd No. 135 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, Cumberland "Banker of Barscobe" (11,842).
 3rd No. 138 W. & D. Wilson, Craighouse, Lockerbie, "Cockatoo 2nd of Stepford" (11,689).
 4th No. 131 Thomas Biggar & Sons, Chapelton, Dalbeattie, "Bannerman of Auchenhay" (11,687).
 V No. 133 John Cunningham, Tarbreoch, Dalbeattie, "Cordova" (11,701).
 C No. 132 The Duke of Buccleuch and Queensberry, K.G., K.T., Drumlanrig Castle, Thornhill, Dumfriesshire, "Earl of Drumlanrig" (11,675).

CLASS 16. COW, of any age, in Milk.—Premiums, £12, £8, £4, and £2.

- 1st No. 140 Sir Robert William Buchanan-Jardine of Castlemilk, Bart., Lockerbie, "Alexa of Castlemilk" (19,452).
 2nd No. 144 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, Cumberland, "Mona" (22,188).
 3rd No. 141 John Cunningham, Tarbreoch, Dalbeattie, "Tarbreoch Doris 3rd" (19,511).
 4th No. 146 Robert T. Scott, Drumhumphry, Dalbeattie, "Cowslip 26th of Drumhumphry" (19,597).
 V No. 139 T. Hope Bell, Morrinton, Dumfries.
 H No. 147 James Wilson, Tundergarth Mains, Lockerbie, "Jessie 2nd" (21,456).

CLASS 17. HEIFER, calved on or after 1st December 1910.—
 Premiums, £10, £5, £3, and £2.

- 1st No. 155 Robert Graham, Auchengassel, Twynholm, "Nora of Auchengassel" (22,596).
 2nd No. 151 John Cunningham, Tarbreoch, Dalbeattie, "Queen May of Tarbreoch" (22,587).
 3rd No. 154 Robert Graham, Auchengassel, Twynholm, "Nector of Auchengassel" (22,593).
 4th No. 153 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, Cumberland, "Trilby IV. of Blackcombe" (22,335).
 V No. 156 Walter Montgomerie Neilson of Queenshill, Ringford, R.S.O., "Clover of Queenshill" (22,423).

CLASS 18. HEIFER, calved on or after 1st December 1911.—
 Premiums, £10, £5, £3, and £2.

- 1st No. 158 Thomas Biggar & Sons, Chapelton, Dalbeattie, "Lizzie 7th of Chapelton" (22,782).
 2nd No. 164 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft, Cumberland, "Mary of Blackcombe" (22,888).
 3rd No. 162 W. B. Donaldson, Dunkyan, Killearn, "Jessica of Killearn" (22,856).
 4th No. 161 John Cunningham, Tarbreoch, Dalbeattie, "Queen May 2nd of Tarbreoch" (22,843).
 V No. 170 Walter Montgomerie Neilson of Queenshill, Ringford, R.S.O., "Jelf of Queenshill" (23,065).
 H No. 169 Walter Montgomerie Neilson of Queenshill, Ringford, R.S.O., "Cintra of Queenshill" (23,062).
 C No. 157 Thomas Biggar & Sons, Chapelton, Dalbeattie, "Lizzie 8th of Chapelton" (22,781).

HIGHLAND.

PRESIDENT'S CHAMPION MEDAL for best Highland Animal.

- No. 214 The Earl of Southesk, Kinnaird Castle, Brechin, "Stella."

Silver Medal to the Breeder of best Highland Animal.

- No. 214 The Earl of Southesk, Kinnaird Castle, Brechin.

Best Group of Four Highland Animals. The group must include one Bull, but not more than two.—Prizes, £10 and £5, contributed from the late Provost Muir MacKean's Fund.

1st D. A. Stewart of Lochdhu, Nairn—Nos. 176, 226, 216, 204.

2nd The Earl of Southesk, Kinnaird Castle, Brechin—Nos. 175, 203, 214, 213.

Breeder of best Bull of any age in Classes 19, 20, and 21—Special Prize of £10, contributed from the late Provost Muir MacKean's Fund.

No. 176 D. A. Stewart of Lochdhu, Nairn.

Breeder of best Bull of any age in Classes 19, 20, and 21—The Silver Medal.

No. 176 D. A. Stewart of Lochdhu, Nairn.

CLASS 19. BULL, calved before 1911.—Premiums, £15, £10, £5, and £3.

1st No. 176 D. A. Stewart of Lochdhu, Nairn, "Morair Inernarin."

2nd No. 175 The Earl of Southesk, Kinnaird Castle, Brechin, "Merlin" (2589).

3rd No. 174 Thomas A. Nelson of Achnacloich, Connel, Argyll, "Douglas" (2557).

4th No. 173 James MacAlister Hall, Killeen, Tayinloan, Kintyre, "MacAlbannach."

H No. 172 The Marquis of Bute, Mount Stuart, Rothesay, "Morair a' Bhealach" (2321).

CLASS 20. BULL, calved in 1911.—Premiums, £15, £10, £5, and £3.

1st No. 179 Kenneth M'Douall of Logan, Ardwell, Stranraer, "Roderick of Logan."

2nd No. 178 Ian Bullough, Meggernie Castle, Aberfeldy, "Gille Riabhach of Meggernie."

3rd No. 180 Gerard Craig Sellar, Ardtornish, Morvern, Argyll, "Bard of Morvern."

4th No. 181 D. A. Stewart of Lochdhu, Nairn, "Laochan Buidhe."

V No. 182 Allan G. Thom of Canna, Oban, "Righ-na-Gleann of Canna."

C No. 177 Thos. L. Anderson, Damside, Auchterarder, "Gille Og of Fasnacloich."

CLASS 21. BULL, calved in 1912.—Premiums, £12, £8, £4, and £2.

1st No. 187 W. Dalziel Mackenzie of Farr, Daviot, Inverness, "Righ Ruadh of Farr."

2nd No. 192 D. A. Stewart of Lochdhu, Nairn, "Cennair Ruadh of Garth."

3rd No. 189 Gerard Craig Sellar, Ardtornish, Morvern, "Morvern Pathfinder."

4th No. 186 Robert Graham, Auchengassel, Twynholm, "Donald."

V No. 184 Ian Bullough, Meggernie Castle, Aberfeldy, "Iarla of Meggernie."

H No. 183 The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Calum Riabhach III. of Atholl."

C No. 191 The Earl of Southesk, Kinnaird Castle, Brechin, "Silenus."

Breeder of best Female of any age in Classes 22, 23, and 24—Special Prize of £10 contributed from the late Provost Muir MacKean's Fund.

No. 214 The Earl of Southesk, Kinnaird Castle, Brechin.

CLASS 22. COW, of any age, in Milk.—Premiums, £12, £8, £4, and £2.

1st No. 204 D. A. Stewart of Lochdhu, Nairn, "Laochag."

2nd No. 201 W. Dalziel Mackenzie of Farr, Daviot, Inverness, "Lady Margaret of Farr" (7633).

3rd No. 194 The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Bean Bhuidhe VI. of Atholl" (7168).

4th No. 193 The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Mairi Ruadh II. of Atholl" (7171).

V No. 196 The Marquis of Bute, Mount Stuart, Rothesay, "Lady Jean of Bute."

H No. 198 Mrs M. M. Cheape, Carsaig and Tirolan, Pennyghael, Isle of Mull, "Lady Ellnor of Castle Grant."

C No. 199 Kenneth M'Douall of Logan, Ardwell, Stranraer, "Sgian of Castle Grant" (7369).

CLASS 23. HEIFER, calved in 1910.—Premiums, £10, £5, £3, and £2.

- 1st No. 214 The Earl of Southesk, Kinnaird Castle, Brechin, "Stella."
 2nd No. 210 W. Dalziel Mackenzie of Farr, Daviot, Inverness, "Banarch of Farr."
 3rd No. 211 Gerard Craig Sellar, Ardtornish, Morvern, Argyll, "Iseabel of Fuinary."
 4th No. 216 D. A. Stewart of Lochdhu, Nairn, "Targeal."
 V No. 213 The Earl of Southesk, Kinnaird Castle, Brechin, "Corrina."
 H No. 206 The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Mairi Ruadh V. of Atholl."
 C No. 215 The Earl of Southesk, Kinnaird Castle, Brechin, "Maura."

CLASS 24. HEIFER, calved in 1911.—Premiums, £10, £5, £3, and £2.

- 1st No. 222 James MacAlister Hall, Killeen, Tayinloan, Kintyre, "Ribhinn of Killeen."
 2nd No. 226 D. A. Stewart of Lochdhu, Nairn, "Laochag."
 3rd No. 221 James MacAlister Hall, Killeen, Tayinloan, Kintyre, "Iseabal Riabhach of Killeen."
 4th No. 227 D. A. Stewart of Lochdhu, Nairn, "Targeal Odhar."
 V No. 220 Captain John Campbell of Kilberry, Kilberry, "Baravalla Mhor" (7888).
 H No. 218 The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Te Riabhach XIV. of Atholl."
 C No. 219 The Marquis of Bute, Mount Stuart, Rothesay, "Morag Og of Bute."

AYRSHIRE.

PRESIDENT'S CHAMPION MEDAL for best Ayrshire.

- No. 327 James Howie, Hillhouse, Kilmarnock, "Howie's Sir Hugh" (9026).

Silver Medal to the Breeder of best Ayrshire.

- No. 327 Sir H. Shaw Stewart, Bart., Ardgowan, Inverkip.

Fife and Kinross Perpetual Gold Challenge Cup, value £200, for best Ayrshire animal registered in the Ayrshire Herd-Book. This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912.

- No. 327 James Howie, Hillhouse, Kilmarnock, "Howie's Sir Hugh" (9026).

Special Prize of £10 for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book, not later than 1st January 1913, given by the Ayrshire Cattle Herd-Book Society.

- No. 240 Robert Wilson, Manswraes, Bridge of Weir, "Manswraes Nettle" (24,590).

Breeder of best Female Animal of any age—Special Prize of £10, contributed from the late Provost Muir MacKean's Fund.

- No. 240 Robert Wilson, Manswraes, Bridge of Weir.

CLASS 25. COW in Milk, calved before 1910.—Premiums, £12, £8, and £4.

- 1st No. 240 Robert Wilson, Manswraes, Bridge of Weir, "Manswraes Nettle" (24,590).
 2nd No. 233 Alexander Cross of Knockdon, Maybole, "Knockdon Lady Constance" (26,424).
 3rd No. 231 Mrs Clark, Fingart Farm, Dunlop, "Fingart Georgina 2nd" (28,616).
 V No. 276 Robert Wilson, Manswraes, Bridge of Weir, "Rose of Bute."
 H No. 266 Ninian Duncan, Little Kilmory, Rothesay, "Little Kilmory Lady White."
 C No. 228 Archibald S. Black, Bogany, Rothesay, "Bogany Milkmaid."

CLASS 26. COW in Milk, calved after 1st January 1910.—
Premiums, £10, £7, and £3.

- 1st No. 254 James Lawrie, West Newton, Strathaven, "Lady Jane 6th" (33,705).
 2nd No. 247 Alexander Cross of Knockdon, Maybole, "White Rose II." (28,442).
 3rd No. 246 Alexander Cross of Knockdon, Maybole, "Lady Fern" (26,425).
 V No. 262 Robert Wilson, Manswraes, Bridge of Weir, "Manswraes Freeland 12th" (27,899).
 H No. 249 Ninian Duncan, Little Kilmory, Rothesay, "Little Kilmory Margaret."
 C No. 253 Mrs Howie, Finnock Bog, Inverkip, "Finnock Bog Nancy" (29,310).

CLASS 27. COW of any age, in Calf, and due to calve within nine months
after the Show.—Premiums, £10, £7, and £3.

- 1st No. 277 Robert Wilson, Craig o' Neilston, "Lady Ann."
 2nd No. 265 Alexander Cross of Knockdon, Maybole, "Bloomer II." (23,098).
 3rd No. 270 John Murray, Carston, Ochiltree, "Carston Cinderella" (26,606).
 V No. 278 Homer Young, Redhills, Dumfries, "Redhills Charlotte" (29,418).
 H No. 268 Lieut. - Col. G. J. Fergusson - Buchanan of Auchentorlie, Bowling, "Auchentorlie Carmela" (24,869).
 C No. 267 Lieut. - Col. G. J. Fergusson - Buchanan of Auchentorlie, Bowling, "Ardyne Brown Bess" (26,152).

CLASS 28. HEIFER, calved after 1st January 1910, in Calf, and due to calve within
three months of the date of the Show.—Premiums, £5, £4, and £2, given by
Mr Alexander Cross of Knockdon.

- 1st No. 283 Mrs M'Alister, Meikle Kilmory, Rothesay, "Meikle Kilmory Queen Ann."
 2nd No. 245 Alexander Cross of Knockdon, Maybole, "Cairnsingle IV." (26,419).
 3rd No. 281 Robert Howie, Platterton Farm, Greenock, "Honeysuckle II."
 V No. 285 Andrew Thomson, Wemyss Farm, Wemyss Bay, "Wemyss Dandy 3rd" (30,740).
 H No. 244 Alexander Cross of Knockdon, Maybole, "Rosedrop" (26,438).
 C No. 279 Lieut. - Col. G. J. Fergusson - Buchanan of Auchentorlie, Bowling, "Auchentorlie Marilla" (26,617).

CLASS 29. HEIFER, calved in 1911.—Premiums, £10, £5, and £3.

- 1st No. 295 James Howie, Hillhouse, Kilmarnock, "Quibbie II." (28,545).
 2nd No. 291 Mrs E. L. Houston Crawford, Dunlop House, Dunlop, "Dunlop Miss Cook" (33,260).
 3rd No. 298 Robert Osborne, Morton Mains, Thornhill, "Morton Mains Bardie 3rd."
 V No. 293 Charles Douglas of Auchlochan, Lesmahagow, "Auchlochan Lovely" (23,864).
 H No. 292 Mrs E. L. Houston Crawford, Dunlop House, Dunlop, "Lochfergus Wendy" (29,079).
 C No. 290 Thomas Clement, Netherton, Newton Mearns, "Netherton Queen Nellie" (23,639).

CLASS 30. HEIFER, calved in 1912.—Premiums, £8, £5, and £3.

- 1st No. 302 George Barclay, Hartfield Farm, Paisley, "Hobsland Lady Olive" (35,002).
 2nd No. 310 James Howie, Hillhouse, Kilmarnock, "Howie's Rose Bowl."
 3rd No. 312 Robert Osborne, Morton Mains, Thornhill, "Morton Mains Cythera."
 V No. 301 George Barclay, Hartfield Farm, Paisley, "Hobsland Snowhead 2nd" (35,004).
 H No. 309 Mrs E. L. Houston Crawford, Dunlop House, Dunlop, "Dunlop Charlotte" (33,258).
 C No. 311 Lady Georgiana Mure, of Caldwell, Uplawmoor, by Glasgow, "Caldwell Cairnie 2nd" (34,166).

DERBY SWEEPSTAKE (organised by the Renfrewshire Agricultural Society for **AYRSHIRE** QUMYS calved in 1910 or 1911.—Gold Medal by Renfrewshire Agricultural Society to 1st Prize-winner.

- 1st No. *k* James Wilson, Manswraes, Bridge of Weir, mostly white.
 2nd No. *e* Mrs Howie, Finnock Bog, Inverkip, brown and white.
 3rd No. *m* James Wilson, Boghall, brown and white.
 4th No. *n* Robert Wilson, Manswraes, Bridge of Weir, brown and white.
 5th No. 281 Robert Howie, Flatterton Farm, Greenock, "Honeysuckle II."
 6th No. 285 Andrew Thomson, Wemyss Farm, Wemyss Bay, "Wemyss Dandy 3rd" (30,740).
 7th No. *h* Alexander Wilson, Thornley Park, Paisley, brown and some white.

Special Prize of £10 for the best Male Animal of the Ayrshire breed, entered with a number in the Ayrshire Cattle Herd-Book not later than 1st January 1913, given by the Ayrshire Cattle Herd-Book Society.

No. 327 James Howie, Hillhouse, Kilmarnock, "Howie's Sir Hugh" (9026).

Breeder of best Bull of any age in Classes 31, 32, and 33—The Silver Medal.

No. 327 Sir H. Shaw Stewart, Bart., Ardgowan, Inverkip.

Breeder of best Bull of any age in Classes 31, 32, 33, and 34—Special Prize of £10, contributed from the late Provost Muir MacKean's Fund.

No. 327 Sir H. Shaw Stewart, Bart., Ardgowan, Inverkip.

CLASS 31. BULL, calved before 1911.—Premiums, £12, £8, and £4.

- 1st No. 318 James Howie, Hillhouse, Kilmarnock, "Carsegowan Coronation" (9120).
 2nd No. 323 Homer Young, Redhills, Dumfries, "Redhills Royal Chief" (8692).
 3rd No. 321 Robert Osborne, Morton Mains, Thornhill, "Morton Mains Prieskan" (9037).
 V No. 322 William Wilson, Cormiston Tower Farm, Biggar, "Scotland's Hero" (9418).
 H No. 319 James Howie, Hillhouse, Kilmarnock, "Howie's Climax" (9024).
 C No. 316 Mrs E. L. Houlson, Craufurd, Dunlop House, Dunlop, Ayrshire, "Hillhouse Marquis" (7843).

CLASS 32. BULL, calved in 1911.—Premiums, £10, £7, and £3.

- 1st No. 327 James Howie, Hillhouse, Kilmarnock, "Howie's Sir Hugh" (9026).
 2nd No. 329 Robert Osborne, Morton Mains, Thornhill, "Morton Mains Hubinate" (9036).
 3rd No. 326 Mrs Clark, Fingart, Dunlop, "Fingart Phyllidas Heir."
 V No. 331 Sir Hugh Shaw Stewart, Bart., Ardgowan, Inverkip, "Goodhope" (8856).
 H No. 332 Homer Young, Redhills, Dumfries, "Redhills Aviator."
 C No. 325 Archibald S. Black, Bogany, Rothesay, "Bogany Kelly" (9634).

CLASS 33. BULL, calved in 1912.—Premiums, £8, £5, and £3.

- 1st No. 334 James Howie, Hillhouse, Kilmarnock, "Howie's Full Moon" (10,188).
 2nd No. 333 George Barclay, Hartfield Farm, Paisley, "Hartfield Buonaparte" (10,244).
 3rd No. 338 Robert Osborne, Morton Mains, Thornhill, "Morton Mains Captation."
 V No. 337 Adam W. Montgomerie, Lessnessock, Ochiltree, "Lessnessock Undaunted."

MILK RECORD CLASSES.

Group of Four Animals, the property of one Exhibitor, drawn from Classes 34 and 35.—Premiums, £10 and £5, collected by Sir Hugh Shaw Stewart, Bart., from the Duke of Portland, Lord Howard de Walden, Lord Montgomerie, Mr C. Douglas, Colonel Blair, Captain Stirling, David Wilson, D.Sc., Mrs Houlison Craufurd, Mr James Howie, and friends in Renfrewshire.

- 1st Robert Osborne, Morton Mains, Thornhill—Nos. 321, 329, 313, 314.
2nd Charles Douglas, of Auchlochan, Lesmahagow—Nos. 342, 341, 294, 293.

CLASS 34. BULL, any age, the progeny of an Ayrshire Cow having an authenticated milk yield.—Premiums, £16, £10, and £5, given by the Board of Agriculture for Scotland.

- 1st No. 327 James Howie, Hillhouse, Kilmarnock, "Howie's Sir Hugh" (9026).
2nd No. 333 George Barclay, Hartfield Farm, Paisley, "Hartfield Buonaparte" (10,244).
3rd No. 321 Robert Osborne, Morton Mains, Thornhill, "Morton Mains Prieskan" (9037).

CLASS 35. HEIFER calved in 1911 or 1912, the progeny of an Ayrshire Cow having an authenticated milk yield.—Premiums, £15, £10, and £5, collected by Sir Hugh Shaw Stewart, Bart., from the Duke of Portland, Lord Howard de Walden, Lord Montgomerie, Mr C. Douglas, Colonel Blair, Captain Stirling, David Wilson, D.Sc., Mrs Houlison Craufurd, Mr James Howie, and friends in Renfrewshire.

- 1st No. 293 Charles Douglas of Auchlochan, Lesmahagow, "Auchlochan Lovely" (28,864).
2nd No. 290 Thomas Clement, Netherton, New Mearns, "Netherton Queen Nellie" (28,639).
3rd No. 343 Adam W. Montgomerie, Lessnessock, Ochiltree, "Stately 2nd" (31,670).

CLASS 36. SPECIAL MILK YIELD CLASS, FOR COWS OF THE AYRSHIRE BREED, three-year-old and upwards, drawn from Classes 25 and 26.—Prizes, £6, £3, £1, and 10s., given by Colonel G. J. Fergusson-Buchanan of Auchentorlie.

- 1st No. 229 Archibald S. Black, Bogany, Rothesay, "Midland Nellie IV." (22,612).
2nd No. 247 Alexander Cross of Knockdon, Maybole, "White Rose II" (26,442).
3rd No. 250 Lieut.-Col. G. J. Fergusson-Buchanan of Auchentorlie, Bowling, "Auchentorlie Axilla 2nd" (26,612).

JERSEY.

PRESIDENT'S CHAMPION MEDAL for best Jersey Animal.

- No. 349 C. Randolph Dudgeon, Cargen Holm, Dumfries, "Raleigh's Homestill" (12,457 H.C.)

Silver Medal to the Breeder of best Jersey Animal.

- No. 349 E. le Roux, St Mary's, Jersey.

CLASS 37. COW, any age.—Premiums, £5, £3, and £2.

- 1st No. 349 C. Randolph Dudgeon, Cargen Holm, Dumfries, "Raleigh's Homestill" (12,457 H.C.).
2nd No. 348 Archibald S. Black, Bogany, Rothesay, "Bogany Robina."

CLASS 38. HEIFER, calved in 1912.—Premiums, £5, £3, and £2.

- 1st No. 353 C. Randolph Dudgeon, Cargen Holm, Dumfries, "Cargen Lady Millie."
2nd No. 351 Major J. A. Houlison Craufurd, Dunlop House, Dunlop, "Rust."
3rd No. 352 Alexander Cross of Knockdon, Maybole, "Lady Cowley."

SHETLAND.

PRESIDENT'S CHAMPION MEDAL for best Shetland Animal.

No. 356 Lady Gertrude Crawford, Coxhill, Lymington, Hants, "Olna."

Silver Medal to the Breeder of best Shetland Animal.

No. 356 Breeder unknown.

CLASS 39. COW, any age.—Premiums, £5, £3, and £2.

- 1st No. 356 Lady Gertrude Crawford, Coxhill, Lymington, Hants, "Olna."
 2nd No. 358 Lady Gertrude Crawford, Coxhill, Lymington, Hants, "Orka."
 3rd No. 359 R. W. R. Mackenzie, Earlsball, Leuchars, "Mist of Earlsball" (223).
 V No. 361 William Morison of Newmiln, Perth, "Cissy of Dron" (308).
 H No. 360 R. W. R. Mackenzie, Earlsball, Leuchars, "Carrie" (214).
 C No. 355 Lady Gertrude Crawford, Coxhill, Lymington, Hants, "Voe."
 C No. 357 Lady Gertrude Crawford, Coxhill, Lymington, Hants, "Schnooza."

CLASS 40. HEIFER, calved in 1912.—Premiums, £5, £3, and £2.

1st No. 363 R. W. R. Mackenzie, Earlsball, Leuchars, "Duenna of Earlsball."

EXTRA STOCK.

The following was Very Highly Commended, and a Medium Silver Medal awarded :—

No. 366 P. H. Coats, Corsebar, Paisley, Bull, "Triumph" (41).

The following was Highly Commended, and a Medium Silver Medal awarded :—

No. 365 P. H. Coats, Corsebar, Paisley, "Garderhouse Pride" (75).

The following was Commended, and a Bronze Medal awarded :—

No. 364 P. H. Coats, Corsebar, Paisley, "Hamnavoe Lily" (343).

BRITISH HOLSTEIN.

PRESIDENT'S CHAMPION MEDAL for best British Holstein Animal.

No. 389 William Sinclair, Kirkhill, Nigg, Kincardineshire, "Kirkhill Count" (1559).

Silver Medal to the Breeder of best British Holstein Animal.

No. 389 William Sinclair, Kirkhill, Nigg, Kincardineshire.

Silver Medals are offered by the British Holstein Cattle Society to the First Prize Winners in Classes 41, 42, 43, and 44.

- No. 368 Hugh Brown, Colton Mains, Dunfermline, "Colton Dimple" (500).
 No. 374 Hugh Brown, Colton Mains, Dunfermline, "Colton Charity 2nd."
 No. 388 D. MacBean, Cradle Hall, Inverness, "Cradle Hall Chief" (1183).
 No. 389 William Sinclair, Kirkhill, Nigg, Kincardineshire, "Kirkhill Count" (1559).

CLASS 41. COW in Milk, calved in or before 1910.—Premiums, £9, £6, and £3.

- 1st No. 368 Hugh Brown, Colton Mains, Dunfermline, "Colton Dimple" (500).
 2nd No. 373 Adam Smith, Lochlands, Larbert, "Lochlands Madge" (2442).
 3rd No. 372 Adam Smith, Lochlands, Larbert, "Lochlands Crum" (2428).
 V No. 370 William Kerr, Houdston, Girvan, "Houdston Beauty."
 H No. 369 Alexander Campbell, Colinton Mains, Mid-Lothian, "Walltower Nell."

CLASS 42. HEIFER, calved in 1911 or 1912.—Premiums, £6, £4, and £2.

- 1st No. 374 Hugh Brown, Colton Mains, Dunfermline, "Colton Charity 2nd."
 2nd No. 379 Adam Smith, Lochlands, Larbert, "Lochlands Nana" (10,014).
 3rd No. 375 Hugh Brown, Colton Mains, Dunfermline, "Colton Darling II."
 V No. 378 William Sinclair, Kirkhill, Nigg, Kincardineshire, "Kirkhill Flo" (9352).
 H No. 376 Hugh Brown, Colton Mains, Dunfermline, "Colton Niobe."

CLASS 43. BULL, calved in or before 1910.—Premiums, £9, £6, and £3.

- 1st No. 388 D. MacBean, Cradle Hall, Inverness, "Cradle Hall Chief" (1183).
 2nd No. 383 William Sinclair, Kirkhill, Nigg, Kincardineshire, "Colton Queen's Own."
 3rd No. 381 Hugh Brown, Colton Mains, Dunfermline, "Colton Puritan" (95).
 V No. 382 Ochil Hills Sanatorium Company, Limited, Athronhall Farm, Milnathort, "Cradle Hall Prince" (1135).

CLASS 44. BULL, calved in 1911 or 1912.—Premiums, £6, £4, and £3.

- 1st No. 389 William Sinclair, Kirkhill, Nigg, Kincardineshire, "Kirkhill Count" (1559).
 2nd No. 385 Hugh Brown, Colton Mains, Dunfermline, "Colton Sultan."
 3rd No. 390 George Stewart, Drum Farm, Bo'ness, "Lochlands Rob Roy" (1679).
 V No. 386 James Caldwell, Braes, Kilbarchan, "Braes President" (989).

FAT CATTLE.*PRESIDENT'S CHAMPION MEDAL for best Fat Animal.*

- No. 402 James W. H. Grant, Wester Elchies, Aberlour (Aberdeen-Angus) "Novena of Elchies" (48,969).

Silver Medal to the Breeder of best Fat Animal.

- No. 402 James W. H. Grant, Wester Elchies, Aberlour.

CLASS 45. OX, any pure Breed or Cross, calved after 1st December 1910.—Premiums, £5 and £2.

- 1st No. 391 Andrew Brooks, North Elphinstone, Tranent (Aberdeen-Angus Cross).
 2nd No. 393 James Cairns, Abercrombie, St Monans (Aberdeen-Angus).

CLASS 46. OX, any pure Breed or Cross, calved after 1st December 1911.—Premiums, £5 and £2.

- 1st No. 396 A. B. & J. G. Matthews, Orchardton, Garlieston (Shorthorn and Galloway Cross).
 2nd No. 398 J. & W. Meiklem, Begg, Kirkcaldy (Aberdeen-Angus Cross).

CLASS 47. HEIFER, any pure Breed or Cross, calved after 1st December 1910.—Premiums, £5 and £2.

- 1st No. 402 James W. H. Grant, Wester Elchies, Aberlour (Aberdeen-Angus), "Novena of Elchies" (48,969).
 2nd No. 405 Charles Penny, Skillymarno, Strichen (Aberdeen - Angus), "Lady Eyebright 3rd of Skillymarno" (49,497).
 H No. 400 James Cairns, Abercrombie, St Monans (Aberdeen-Angus), "Lizzie 32nd of Fasque" (48,890).
 C No. 404 J. & W. Meiklem, Begg, Kirkcaldy (Aberdeen-Angus Cross).

CLASS 48. HEIFER, any pure Breed or Cross, calved after 1st December 1911.—Premiums, £5 and £2.

- 1st No. 407 J. & W. Meiklem, Begg, Kirkcaldy (Aberdeen-Angus Shorthorn Cross).
 2nd No. 408 J. & W. Meiklem, Begg, Kirkcaldy (Aberdeen-Angus Cross).
 V No. 406 A. B. & J. G. Matthews, Orchardton, Garlieston (Shorthorn and Galloway Cross).

HORSES

FOR AGRICULTURAL PURPOSES.

DRAUGHT STALLIONS.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Stallion or Colt.

No. 460 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baron's Seal" (17,097).

Silver Medal to the Breeder of best Clydesdale Stallion or Colt.

No. 460 J. P. Sleigh, St John's Wells, Fyvie.

*Breeder of best Male Animal of any age in Classes 49, 50, 51, and 52—
The Silver Medal.*

No. 460 J. P. Sleigh, St John's Wells, Fyvie.

Paisley Perpetual Gold Challenge Cup, value £300, for best Clydesdale Stallion or Colt in Classes 49, 50, 51, and 52, registered in the Clydesdale Stud-Book. This Cup, along with an endowment of £800, has been provided from money collected by the late Provost Muir MacKean in commemoration of the Society's first Show at Paisley in 1913.

No. 460 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baron's Seal" (17,097).

The Clydesdale Stallion which is the sire of the five best animals in the two-year-old and yearling Classes (Colts or Fillies); entered in the ordinary Classes.—Prizes, £10 and £5, contributed from the late Provost Muir MacKean's Fund.

A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, sire Baron's Pride (9122).

William Dunlop, Dunure Mains, Ayr, sire Baron of Buchlyvie (11,263).

CLASS 49. STALLION, foaled before 1910.—Premiums, £20, £15, £10, and £4.

1st No. 414 William Dunlop, Dunure Mains, Ayr, "Dunure Footprint" (15,203).

2nd No. 420 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Signet" (16,816).

3rd No. 422 A. Rennie, Greenhill Stud, Paisley, "Drumley" (15,199).

4th No. 409 George Alston, Loudon Hill, Darvel, "High Merit" (14,677).

V No. 416 James Kilpatrick, Craigie Mains, Kilmarnock, "Montrave Mariner" (17,398).

H No. 410 James Boyd of Cariskiey, Southend, Campbeltown, "Cariskiey II." (15,768).

C No. 421 John Pollock, Paper Mill, Langside, Glasgow, "Silver Wood" (16,066).

CLASS 50. ENTIRE COLT, foaled in 1910.—Premiums, £20, £15, £10, and £4.

1st No. 434 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baronet of Ballindalloch" (17,101).

2nd No. 430 William Dunlop, Dunure Mains, Ayr, "Dunure Peer" (17,236).

3rd No. 435 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baron's Crown" (16,457).

4th No. 431 James Kilpatrick, Craigie Mains, Kilmarnock, "Craigie Elect" (16,528).

V No. 437 W. M. Ritchie, Balcairn, Old Meldrum, "Prince of Balcairn" (17,430).

H No. 424 Andrew Allen, Appleby, Whithorn, "Sir Malvern" (17,506).

C No. 442 Scott Wyllie, Milton of Luncarty, Perth, "Milton" (17,386).

William Taylor Memorial Prize of £10 and Certificate to the Breeder of the best Clydesdale Entire Colt entered in Classes 51 and 52, given by William Taylor Memorial Committee.

No. 460 J. P. Sleight, St John's Wells, Fyvie.

CLASS 51. ENTIRE COLT, foaled in 1911.—Premiums, £20, £12, £8, and £4.

- 1st No. 460 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baron's Seal" (17,097).
 2nd No. 448 William Dunlop, Dunure Mains, Ayr, "Dunure Stephen."
 3rd No. 462 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baron Signet" (17,099).
 4th No. 458 A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Baron's Stamp" (17,100).
 V No. 445 Thomas Clark, Pitlandie, Stanley, Perthshire, "Rising Tide" (17,454).
 H No. 472 J. P. Sleight, St John's Wells, Fyvie, "Ivo."
 C No. 463 Robert Park, Brunstane, Portobello, "Ivanhoe" (17,310).

CLASS 52. ENTIRE COLT, foaled in 1912.—Premiums, £15, £10, £6, and £4.

- 1st No. 477 Robert Brydon, The Dene, Seaham Harbour, "Phillipine."
 2nd No. 476 Robert Bryan, Orchardton, Cumnock, "Lord Bute."
 3rd No. 491 John P. Sleight, St John's Wells, Fyvie.
 4th No. 481 William Kean, Chapelton, West Kilbride, "Chapelton Diamond."
 V No. 483 Sir John Macpherson-Grant, Bart., Ballindalloch Castle, Ballindalloch, "Invereshie."
 H No. 490 John Samson, Drumcross, Bishopton.
 C No. 482 John Leckie, Inchwood, Milton of Campsie, "Royal Print."

DERBY SWEEPSTAKE (organised by the Renfrewshire Agricultural Society) for CLYDESDALE YEARLING COLTS.—Gold Medal by Renfrewshire Agricultural Society to 1st Prize-winner.

- 1st No. 490 John Samson, Drumcross, Bishopton, bay.
 2nd No. *h* John Mackay, Cross Mill, Barrhead, brown, white mark.
 3rd No. *c* Mrs W. S. Park, Hatton, Bishopton, brown, white legs.
 4th No. *i* R. C. Middlemas, Auchenames, Milliken Park, dark brown, with white face and legs.
 5th No. *d* David Riddell, Blackhall, Paisley, brown.

DRAUGHT GELDINGS.

PRESIDENT'S CHAMPION MEDAL for best Draught Gelding.

No. 507 Homer Young, Redhills, Dumfries, "Satisfaction."

Silver Medal to the Breeder of best Draught Gelding.

No. 507 John Young, Brockloch, Dalbeattie.

CLASS 53. DRAUGHT GELDING, foaled before 1910.—Premiums, £10, £5, and £3.

- 1st No. 498 Scottish Co-operative Wholesale Society, Ltd., 95 Morrison Street, Glasgow, "Jim."
 2nd No. 495 William Fleming, Fisheston, Rutherglen.
 3rd No. 500 Hugh Todd, Harperland, Kilmarnock, "Major."
 V No. 499 Scottish Co-operative Wholesale Society, Ltd., 95 Morrison Street, Glasgow, "Peter."
 H No. 496 W. & J. Kerr, Old Graitney, Greta, Carlisle, "Tom."
 C No. 493 Peter Beaton, 15 Craufurd Street, Greenock.

CLASS 54. DRAUGHT GELDING, foaled in 1910.—Premiums, £6, £4, and £3.

- 1st No. 507 Homer Young, Redhills, Dumfries, "Satisfaction."
 2nd No. 505 D. Y. Stewart, Carse of Trowan, Crief, "Sammy."
 3rd No. 506 James Wallace, Hillhead Farm, Kilmarnock, "Harry."
 V No. 504 J. & W. Meiklem, Begg, Kirkcaldy, "Jamie."
 H No. 503 James Lohar, Greenlees, Cambuslang.

CLASS 55. DRAUGHT GELDING, foaled in 1911.—Premiums, £6, £4, and £3.

- 1st No. 512 J. & W. Meiklem, Begg, Kirkcaldy, "Willie."
 2nd No. 514 Joseph G. Scott, Kinpurney, Newtyle, Forfarshire.
 3rd No. 508 Alexander Clark, Newton, Markinch, "Sir David."
 V No. 509 Thomas Clark, Pitlandie, Stanley.
 H No. 516 Homer Young, Redhills, Dumfries, "Victor."
 C No. 513 John Samson, Drumcross, Bishopton.

DRAUGHT MARES AND FILLIES.*PRESIDENT'S CHAMPION MEDAL for best Clydesdale Mare or Filly.*

- No. 534 J. Ernest Kerr of Harviestoun Castle, Dollar, "Harviestoun Phyllis."

Silver Medal to the Breeder of best Clydesdale Mare or Filly.

- No. 534 J. Ernest Kerr of Harviestoun Castle, Dollar.

Best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book—Cawdor Challenge Cup, value 50 guineas, given by the Clydesdale Horse Society.

- No. 534 J. Ernest Kerr of Harviestoun Castle, Dollar, "Harviestoun Phyllis."

CLASS 56. MARE, of any age, with Foal at foot.—Premiums, £20, £12, £7, and £4.

- 1st No. 520 J. & W. Meiklem, Begg, Kirkcaldy, "Myrene."
 2nd No. 519 A. B. Matthews, Newton-Stewart, "Anice" (26,883).
 3rd No. 521 Stephen Mitchell, Boquhan, Kippen Station, Stirlingshire, "Sweet Melody."
 4th No. 522 John P. Sleigh, St John's Wells, Fyvie, "Lucilla" (30,460).
 C No. 518 James Kinloch, Ardoch, Cardross, "Ardoch Jean."

CLASS 57. YELD MARE, foaled before 1910.—Premiums, £12, £9, £6, and £4.

- 1st No. 528 William Dunlop, Dunure Mains, Ayr, "Dunure Ideal" (21,283).
 2nd No. 529 William Dunlop, Dunure Mains, Ayr, "Sarcelle" (26,861).
 3rd No. 531 J. E. Kerr, Harviestoun Castle, Dollar, "Harviestoun Doris."
 4th No. 527 Robert Brydon, The Dene, Seaham Harbour, "Maid of Threave."
 V No. 525 George Argo, Petty, Fyvie, "Lady M'Neil" (32,084).
 H No. 530 Francis Gilbert, Whiteside, Tullynessle, Alford, "Chief Lady."
 C No. 532 John M'Culloch, Laggan, Ballantrae, "Dean of Laggan."

CLASS 58. YELD MARE or FILLY, foaled in 1910.—Premiums, £12, £9, £6, and £4.

- 1st No. 534 J. Ernest Kerr of Harviestoun Castle, Dollar, "Harviestoun Phyllis."
 2nd No. 536 Stephen Mitchell, Boquhan, Kippen Station, Stirlingshire, Filly, "Nannie."
 3rd No. 538 John P. Sleigh, St John's Wells, Fyvie, "Black Silk."
 4th No. 537 W. M. Ritchie, Balcairn, Old Meldrum, Filly, "Balcairn Baroness."
 H No. 535 Thomas Meikle, The Farme, Glassford, Strathaven, Filly.
 C No. 533 James Boyd of Cariskey, Southend, Campbelltown, Filly, "Maid of Cariskey."

CLASS 59. FILLY, foaled in 1911.—Premiums, £12, £9, £6, and £4.

- 1st No. 544 William Dunlop, Dunure Mains, Ayr, "Dunure Chosen."
 2nd No. 545 William Dunlop, Dunure Mains, Ayr, "Dunure Toby."
 3rd No. 547 William Kean, Chapelton, West Kilbride, "Chapelton Ruby."
 4th No. 549 William Neilson, Haining Valley, Linlithgow, "Lady Mary."
 V No. 543 Dobson & Murray, Parkhall, Douglas, Lanarkshire, "Twilight."
 H No. 546 James Gray, Birkenwood, Gargunnoch, "Kiaora."
 C No. 550 William Prentice, Fairnieside, Ayton, Berwickshire, "May Mischief."

CLASS 60. FILLY, foaled in 1912.—Premiums, £12, £9, £6, and £4.

- 1st No. 555 Andrew Brooks, North Elphinstone, Tranent, "Lady Betty."
 2nd No. 563 Stephen Mitchell, Boquhan, Kippen Station, Stirlingshire, "Boquhan Lady Margaret."
 3rd No. 558 William Dunlop, Dunure Mains, Ayr, "Dunure Glad Eye."
 4th No. 560 J. Ernest Kerr of Harviestoun Castle, Dollar, "Harviestoun Jean."
 V No. 564 Robert Park, Brunstane, Portobello, "Prudence."
 H No. 559 James Gray, Birkenwood, Gargunnoch, "Robina."
 C No. 565 James Robertson, Craichmore, Stranraer, "Carina V."

DERBY SWEEPSTAKE (organised by the Renfrewshire Agricultural Society) for CLYDESDALE YEARLING FILLY.—Gold Medal by Renfrewshire Agricultural Society to 1st Prize-winner.

- 1st No. *g* John Kerr, Duchal, Kilmaccolm, brown.
 2nd No. *m* John Pollock, Paper Mill Farm, Langside, bay.
 3rd No. *e* John Holmes, Bardrainey, Renfrewshire, brown.
 4th No. *a* Donald Bain, Kaimshill, Lochwinnoch, dark brown.
 5th No. *c* Matthew Gilmour, Town of Inchinnan, Inchinnan, dark brown.
 6th No. *b* Matthew Bowie, Blackbyres, Barrhead, brown.

HUNTERS.**PRESIDENT'S CHAMPION MEDAL for best Hunter.**

No. 640 John Drage, Chapel Brampton, Northampton, Gelding, "Bridge."

Silver Medal to the Breeder of best Hunter.

No. 640 Breeder unknown.

CLASS 61. HUNTER BROOD MARE, with Foal at foot.—Premiums, £20, £10, and £5.

- 1st No. 572 James Cairns, Abercrombie, St Monans, "Spinning Girl."
 2nd No. 573 James Cairns, Abercrombie, St Monans, "Sylvia."
 3rd No. 578 T. & H. Ward, Almsford Bank Farm, Leeds Road, Harrogate, "Lady-like."
 V No. 570 W. A. Baird, Lennoxlove, Haddington, "Lady Slane."
 H No. 576 John G. M'Cubbin, King's Arms Hotel, Maybole, "Princess Betsy."
 C No. 569 Frank Allison, 1 Bondgate, Selby, Yorks, "Clear the Way" (3343).

Best Hunter Filly in Classes 62, 63, and 64, registered with a number in the Stud-Book of the Hunter Improvement Society—Champion Gold Medal, given by the Hunters' Improvement Society.

No. 603 James Cairns, Abercrombie, St Monans, Filly, "Ella" (4148).

CLASS 62. COLT, GELDING, or FILLY, foaled in 1912, the produce of thoroughbred Stallions or registered Hunter sire, out of Mare of any breed.—Premiums, £10, £5, and £3.

- 1st No. 587 Arthur John Dorman, Grey Towers, Nunthorpe, Yorkshire, Gelding, "Golf Ball."
 2nd No. 590 Major M'Kie of Ernespie, Castle-Douglas, Filly, "Queen Anne."
 3rd No. 592 William Thompson, Oak Bank, Houghton, Carlisle, Gelding, "Sir Mark."
 V No. 584 Miss Thomson Currie, Trynlaw, Cupar-Fife, Filly, "Ida."
 H No. 585 Miss Mary A. Dalrymple, Elliston, St Boswells, Filly, "Brenda."
 C No. 580 George Barclay, Thornhill, Johnstone, Filly.

CLASS 63. FILLY, MARE, or GELDING, for field, foaled in 1911, the produce of thoroughbred Stallion or registered Hunter sire, out of Mare of any breed—*in hand*.—Premiums, £10, £5, and £3.

- 1st No. 599 Arthur John Dorman, Grey Towers, Nunthorpe, Yorkshire, Gelding, "Racket."
 2nd No. 598 David Deuchar, Low Buston, Warkworth, Northumberland, Filly, "Gay Gertrude" (4443).
 3rd No. 602 James Baird Thorneycroft of Hillhouse, Troon, Filly, "Barbette the 2nd."
 V No. 600 George Russell, Hatton, Lundin Links, Gelding, "Trumpeter."
 H No. 601 William Thompson, Oak Bank, Houghton, Carlisle, Gelding, "Major."

CLASS 64. YELD MARE, FILLY, or GELDING, for field, foaled in 1910, the produce of thoroughbred Stallion or registered Hunter sire, out of Mare of any breed—*in hand*.—Premiums, £10, £5, and £3.

- 1st No. 604 H. R. Cayzer, Lanfine, Newmilns, Ayrshire, Gelding, "The Saint."
 2nd No. 611 Andrew Wilson, Esbie, Lochmaben, Gelding, "Hazel Nut."
 3rd No. 603 James Cairns, Abercrombie, St Monans, Filly, "Ella" (4143).
 V No. 610 Hugh Todd, Harperland, Kilmarnock, Gelding, "Rufus."
 H No. 609 William Thompson, Oakbank, Houghton, Carlisle, Gelding, "Marquis."

Champion Prize of £25 for the best Hunter in Classes 65, 66, 67, 68, and 69, up to any weight.

- No. 640 John Drage, Chapel Brampton, Northampton, Gelding, "Bridge."

Special Prize of £10 for the best Hunter bred in Scotland, four years old and upwards, shown in Classes 65, 67, and 70—given by Royal Caledonian Hunt.

- No. 623 James Cairns, Abercrombie, St Monans, Gelding, "Surprise."

Special Prize of £5 to the breeder of the animal winning above prize—given by Royal Caledonian Hunt.

- No. 623 The late Captain Clayhills Henderson.

CLASS 65. MARE or GELDING, foaled in 1909, to carry 14 st. and over—*in saddle*.—Premiums, £20, £15, and £10.

- 1st No. 614 A. R. Robertson, Atbara, Stillorgan, Co. Dublin, Gelding, "The Joker."
 2nd No. 612 Miss Mary A. Dalrymple, Elliston, St Boswells, Gelding, "Marquis."

Special Prize of £10 for the best Hunter bred in Scotland, four years old and upwards, shown in Classes 66, 68, 69, 71, and 72—given by Royal Caledonian Hunt.

- No. 650 T. & H. Ward, Almsford Bank Farm, Harrogate, Gelding, "Westside."

Special Prize of £5 to the breeder of the animal winning above prize—given by Royal Caledonian Hunt.

- No. 650 Miss Gracie Robertson, Sandhills, Monkton, Ayrshire.

CLASS 66. MARE or GELDING, foaled in 1909, to carry under 14 st.—
in saddle.—Premiums, £15, £10, and £5.

- 1st No. 617 Alexander Cross, Langbank, Renfrewshire, Gelding, "Clonmell."
2nd No. 621 T. & H. Ward, Almsford Bank Farm, Harrogate, Gelding, "Baronet."
3rd No. 620 J. H. Stokes, Great Bowden, Market Harboro', Gelding, "Royal Acomb."
V No. 616 Walter J. Armstrong, The Park, Annan, Gelding, "Chackie."
H No. 619 C. H. Scott Plummer of Sunderland Hall, Selkirk, Mare.

CLASS 67. MARE or GELDING, foaled before 1909, to carry 14½ st. and upwards—*in saddle*.—Premiums, £25, £15, and £7.

- 1st No. 625 Alexander Cross, Langbank, Renfrewshire, Gelding, "Laidlaw."
2nd No. 627 John Drage, Chapel Brampton, Northampton, Gelding, "Nimrod."
3rd No. 630 T. & H. Ward, Almsford Bank Farm, Harrogate, Gelding, "Snow-storm."
V No. 624 Mrs Allan Connell, Blairstown, Killearn, Gelding, "The Priest."
H No. 629 J. H. Stokes, Great Bowden, Market Harboro', Gelding, "Gambler."
C No. 626 W. C. Dickson, Caldwell House, Glasgow, Mare, "Seagull."

CLASS 68. MARE or GELDING, foaled before 1909, to carry 13 st. and under 14½ st.—*in saddle*.—Premiums, £35, £20, £15, and £10.

- 1st No. 640 John Drage, Chapel Brampton, Northampton, Gelding, "Bridge."
2nd No. 647 J. H. Stokes, Great Bowden, Market Harboro', Gelding, "Lusk."
3rd No. 641 W. A. Simpson Hinchliffe, 9 Park Parade Stables, Harrogate, Gelding, "Broadwood."
4th No. 638 Alexander Cross, Langbank, Renfrewshire, Gelding, "Tipperary."
V No. 650 T. & H. Ward, Almsford Bank Farm, Harrogate, Gelding, "West-side."
H No. 636 Alexander Cross, Langbank, Renfrewshire, Gelding, "Straker."
C No. 639 W. C. Dickson, Caldwell House, Glasgow, Gelding, "Mayo."

CLASS 69. MARE or GELDING, foaled before 1909, to carry under 13 stone—
in saddle.—Premiums, £25, £15, and £10.

- 1st No. 660 Miss Marie E. MacAndrew, Stewartlea, Ayr, Gelding, "Flanagan."
2nd No. 662 John H. Stokes, Great Bowden, Market Harboro', Mare, "Elegance."
3rd No. 659 John Drage, Chapel Brampton, Northampton, Gelding, "Revolver."
V No. 654 George Barclay, Thornhill, Johnstone, Gelding, "Duke."
H No. 663 T. & H. Ward, Almsford Bank Farm, Harrogate, Gelding, "Black-bird."

Silver Cup, value £50, to become the property of the winner, presented by the Dowager Lady Smiley, *for the best Hunter Mare or Gelding, four years old and upwards, owned by a subscriber to any recognised Pack of Hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1912-1913 by its owner.*

No. 625 Alexander Cross, Langbank, Renfrewshire, Gelding, "Laidlaw."

CLASS 70. MARE or GELDING, four years old and upwards, owned by a subscriber to any recognised Pack of Hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1912-1913 by its owner, to carry 14½ stone and upwards.—Premiums, £25, £15, and £7.

- 1st No. 625 Alexander Cross, Langbank, Renfrewshire, Gelding, "Laidlaw."
2nd No. 624 Mrs Allan Connell, Blairstown, Killearn, Gelding, "The Priest."
3rd No. 665 John D. Gemmell, Jobmaster, Sun Yard, Ayr, Gelding, "Aloft."
V No. 628 James F. Muir, Hellybush House, Ayr, Gelding, "Belston Lad."

CLASS 71. MARE or GELDING, four years old and upwards, owned by a subscriber to any recognised Pack of Hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1912-1913 by its owner, to carry 13 stone and under 14½ stone.—Premiums, £25, £15, and £7.

- 1st No. 617 Alexander Cross, Langbank, Renfrewshire, Gelding, "Clonmell."
- 2nd No. 636 Alexander Cross, Langbank, Renfrewshire, Gelding, "Straker."
- 3rd No. 646 James F. Muir, Hollybush House, Ayr, Gelding, "Saber."
- V No. 634 James Cairns, Abercrombie, St Monans, Gelding, "Captain."
- H No. 632 Andrew Arthur, Lainshaw, Stewarton, Gelding, "Ginger."

CLASS 72. MARE or GELDING, four years old and upwards, owned by a subscriber to any recognised Pack of Hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1912-1913 by its owner, to carry under 13 stone.—Premiums, £25, £15, and £7.

- 1st No. 660 Miss Marie E. MacAndrew, Stewartlea, Ayr, Gelding, "Flannagan."
- 2nd No. 649 James Baird Thorneycroft of Hillhouse, Troon, Gelding, "Oliver."
- 3rd No. 654 George Barclay, Thornhill, Johnstone, Gelding, "Duke."
- V No. 668 John D. Gemmell, Jobmaster, Sun Yard, Ayr, Mare, "Mistletoe."

CLASS 73. MARE or GELDING, four years old and upwards, owned by tenant farmers whose chief occupation is farming, and hunted by them with any established Pack of Fox-Hounds in Scotland in the season 1912-1913.—Premiums, £15, £10, and £5.

- 1st No. 634 James Cairns, Abercrombie, St Monans, Gelding, "Captain."
- 2nd No. 616 Walter J. Armstrong, The Park, Annan, Gelding, "Chackie."
- 3rd No. 623 James Cairns, Abercrombie, St Monans, Gelding, "Surprise."
- V No. 672 John Hunter & Sons, Langlands, Tarbolton, Gelding, "Gay Boy."
- H No. 651 Andrew Wilson, Esbie, Lochmaben, Gelding, "Briar Root."

HACKNEYS.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Hackney in Classes 74 to 82.

No. 702 Robert Scott, Thornhome, Carlisle, "Flash Mathias" (11,426).

Silver Medal to the Breeder of best Hackney in Classes 74 to 82.

No. 702 R. C. Marshall, Burntshields, Kilbarchan.

Champion Prize of £10, or a Gold Medal of the same value, offered by the Hackney Horse Society for best Mare or Filly in Hackney or Pony Classes.

No. 676 John Makeague, Golborne Park, Newton-le-Willows, Lancashire, "Pious Bonds" (16,103).

CLASS 74. BROOD MARE, 15 hands and upwards, with Foal at foot, or to foal this season to a registered sire. Registered in the Hackney Stud-Book.—Premiums, £10, £6, and £4.

- 1st No. 676 John Makeague, Golborne Park, Newton-le-Willows, Lancashire, "Pious Bonds" (16,103).
- 2nd No. 674 T. & J. Chassels, Muirhouse, Motherwell, "Clyde Orchid" (21,284).
- 3rd No. 673 Walter Briggs, Linden Hall, Borwick, nr. Carnforth, Lancashire, "Albin Ophelia" (20,474).
- V No. 677 Seton M. Thomson, Preston House, Linlithgow, "Preston Pacific" (20,954).

CLASS 75. BROOD MARE, under 15 hands, with Foal at foot, or to foal this season to a registered sire. Registered in the Hackney Stud-Book.—Premiums, £10, £8, and £4.

- 1st No. 679 Frederick Hardwick, Over-Peover, Knutsford, Cheshire, "Burlington Jewel" (14,200).
- 2nd No. 680 John Makeague, Golborne Park, Newton-le-Willows, Lancashire, "Terrington Hyacinth" (16,984).
- 3rd No. 681 F. W. Wotherspoon, Maxwellton House, Paisley, "Maxwellton Maid" (20,850).

CLASS 76. YELD MARE or FILLY, foaled in 1910. Registered in the Hackney Stud-Book.—Premiums, £8, £5, and £3.

- 1st No. 684 William S. Miller, Glendermott, Craigmore, Bute, Mare, "Ring-mistress" (22,206).
- 2nd No. 683 John W. Kynoch, Isla Bank, Keith, Filly, "Isla Bank Copper Maid" (22,085).

CLASS 77. FILLY, foaled in 1911. Registered in the Hackney Stud-Book.—Premiums, £8, £5, and £3.

- 1st No. 687 T. & J. Chassels, Muirhouse, Motherwell "Clyde Surprise" (Vol. 31).
- 2nd No. 686 Peter Ballantyne, 9 M'Farlane Street, Glasgow, "Moordale Quality" (22,692).
- 3rd No. 691 F. W. Wotherspoon, Maxwellton House, Paisley, "Glenfield Maid" (Vol. 31).
- V No. 690 Seton M. Thomson, Preston House, Linlithgow, "Preston Primrose" (22,752).

CLASS 78. FILLY, foaled in 1912. Eligible for Entry in the Hackney Stud-Book.—Premiums, £8, £5, and £3.

- 1st No. 694 Enoch Glen, Fallside Hackney and Pony Stud, Bathgate, "Glenavon Orchid."
- 2nd No. 697 J. M'Donald, Home Wood, Inverness, "Home Wood Queen" (Vol. 31).
- 3rd No. 698 William S. Miller, Glendermott, Craigmore, Isle of Bute.
- V No. 699 F. W. Wotherspoon, Glenfield, Maxwellton House, Paisley, "Miss Maxwell" (Vol. 31).
- H No. 693 T. & J. Chassels, Muirhouse, Motherwell, "Clyde Sunrise" (11,136).

Champion Prize of £10 for best Stallion or Colt in the Hackney or Pony Classes, contributed from the late Provost Muir MacKean's Fund.

- No. 702 Robert Scott, Thornhome, Carluke, "Flash Mathias" (11,426).

CLASS 79. STALLION, foaled in or before 1910, over 15 hands. Registered in the Hackney Stud-Book.—Premiums, £10, £8, and £4.

- 1st No. 702 Robert Scott, Thornhome, Carluke, "Flash Mathias" (11,426).
- 2nd No. 700 T. & J. Chassels, Muirhouse, Motherwell, "Clyde Barleycorn" (12,018).
- 3rd No. 701 Alexander Cowe, 1 Castle Road, Ellon, Aberdeenshire, "Glenavon Royal" (11,446).

CLASS 80. STALLION, foaled in or before 1910, over 14 and not over 15 hands. Registered in the Hackney Stud-Book.—Premiums, £10, £8, and £4.

- 1st No. 704 F. W. Wotherspoon, Maxwellton House, Paisley, "Sir Max" (Vol. 31).

CLASS 81. ENTIRE COLT, foaled in 1911. Registered in the Hackney Stud-Book.—Premiums, £8, £5, and £3.

- 1st No. 709 J. M'Donald, Home Wood, Inverness, "Home Wood King" (12,087).
 2nd No. 707 Enoch Glen, Fallside Hackney and Pony Stud, Bathgate, "Merry Mathias" (12,118).
 3rd No. 708 Hugh Leggat, Cross Arthurlie House, Barrhead, "Arthurlie Squire" (11,974).
 V No. 706 Thomas Brown, 29 Stewart Street, Carlisle, "Lord Quality" (12,104).

CLASS 82. ENTIRE COLT, foaled in 1912. Eligible for Entry in the Hackney Stud-Book.—Premiums, £8, £5, and £3.

- 1st No. 711 Charles E. Galbraith, Terregles, Dumfries.
 2nd No. 712 Enoch Glen, Fallside Hackney and Pony Stud, Bathgate, "Glenavon A1."
 3rd No. 710 Walter Briggs, Linden Hall, Borwick, near Carnforth, Lancashire, "Albin Brigella."
 V No. 714 John W. Kynoch, Isla Bank, Keith, "Disraeli of Isla Bank."

PONIES.

PRESIDENT'S CHAMPION MEDAL for best Pony.

- No. 719 Hugh Leggat, Cross Arthurlie House, Barrhead, Mare, "Arthurlie Golden Promise" (22,376).

Silver Medal to the Breeder of best Pony.

- No. 719 Alexander Morton, Gowanbank, Darvel.

Pony under 10½ hands, in saddle.—Prizes, £5, £3, and £2, contributed from the late Provost Muir MacKean's Fund.

- 1st No. 820 Charles Douglas of Auchlochan, Lesmahagow, "Primavera of Auchlochan."
 2nd No. 802 R. W. R. Mackenzie, Earlsall, Leuchars, "Bandsol."
 3rd No. 823 R. W. R. Mackenzie, Earlsall, Leuchars, "Monster" (2114).
 V No. 796 William Mungall of Transy, Dunfermline, "Selwood of Transy" (619).
 H No. 792 R. W. R. Mackenzie, Earlsall, Leuchars, "Radnor King."
 C No. 793 William Mungall of Transy, Dunfermline, "Silverdale of Transy" (620).

CLASS 83. STALLION, 3 years old and upwards, 14 hands and under, *in hand*.—Premiums, £5, £3, and £2.

- 1st No. 716 David Blanche, Heathfield, Greenock, "Heathfield George."

CLASS 84. YELD MARE, FILLIY, or GELDING, 3 years old and upwards, over 13 and not over 14 hands, *in saddle*.—Premiums, £5, £3, and £2.

- 1st No. 719 Hugh Leggat, Cross Arthurlie House, Barrhead, Mare, "Arthurlie Golden Promise" (22,376).
 2nd No. 718 J. Ernest Kerr, Harviestoun Castle, Dollar, Mare, "Glenavon Pride" (20,681).
 3rd No. 722 William S. Miller, Glendermott, Craigmore, Isle of Bute, Mare, "Berry Hill Sniffer" (21,868).
 V No. 717 Enoch Glen, Fallside Hackney and Pony Stud, Bathgate, Gelding, "Glenavon Masterpiece."

CLASS 85. YELD MARE, FILLY, or GELDING, 3 years old and upwards, over 12 and not over 18 hands, in saddle.—Premiums, £5, £3, and £2.

- 1st No. 724 David Blanche, Heathfield, Greenock, Mare, "Little Queen."
 2nd No. 726 James M'Morran, 12 Clarkston Road, Cathcart, Glasgow, Mare, "Claremont Princess."
 3rd No. 727 John Simpson, 6 King Street, Aberdeen, Mare, "Harviestoun Waif" (20,724).
 V No. 728 James Smith, Woodburn, Falkirk, Mare, "Woodburn Veronique" (21,782).
 H No. 725 E. G. Fraser-Tytler, Aldourie, Inverness, Mare, "Princess" (3605).

CLASS 86. YELD MARE, FILLY, or GELDING, 3 years old and upwards, 12 hands and under, in hand.—Premiums, £5, £3, and £2.

- 1st No. 730 James Smith, Woodburn, Falkirk, Mare, "Bohemian Girl."
 2nd No. 729 Andrew Low, Oswald Road, Kirkcaldy, Gelding, "Starlight."

POLO PONIES.

CLASS 87. POLO PONY. Class open to Ponies which have been regularly played this season with any recognised Polo Club. Ponies to be tested for manners and handiness, as well as make and shape. Prizes, £15, £10, and £5, contributed from the late Provost Muir MacKean's Fund.

(CLASS ABANDONED.)

HIGHLAND PONIES.

PRESIDENT'S CHAMPION MEDAL for best Highland Pony.

- No. 766 The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Lady Louise" (1530).

Silver Medal to the Breeder of best Highland Pony.

- No. 766 Colin Campbell, Glenshiel, Kyle of Lochalsh.

Special Prize of £15 for the best Highland Pony Stallion or Mare actually registered with a number in the Highland Section of the Polo and Riding Pony Stud-Book, given by the Polo and Riding Pony Society.

- No. 766 The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Lady Louise," (1530).

CLASS 88. HIGHLAND PONY STALLION, of the heavy type, 3 years old or upwards, not exceeding 14.2 hands.—Premiums, £3, £4, and £2.

- 1st No. 740 Neil M'Arthur, Meadows, Campbeltown, "Braemore" (429).
 2nd No. 741 J. A. Ransald Macdonald, Lochmaddy, North Uist, "Prince Charlie" (432).
 3rd No. 742 C. W. Dyson Perrins, of Ardross, Ardross Castle, Alness, "Allan II." (620).

EXTRA STOCK.

The following were Very Highly Commended, £5 and Medium Silver Medals awarded :—

- No. 744 John Macdonald, Glenbrittle, Isle of Skye, "Grenitote" (332).
 No. 745 C. W. Dyson Perrins, of Ardross, Ardross Castle, Alness, "Borrodale" (384).

CLASS 89. HIGHLAND PONY STALLION, of the light type, 3 years old or upwards, not exceeding 14.2 hands.—Premiums £8, £4, and £2.

- 1st No. 748 E. G. Fraser-Tytler, Aldourie, Inverness, "Clansman II." (617).
 2nd No. 746 Sir George Bullough of Isle of Rhum, by Oban, "Rhum Laddie" (606).
 3rd No. 750 J. H. Munro Mackenzie of Calgary, Isle of Mull, "Geandarach" (643).
 V No. 749 J. H. Munro Mackenzie of Calgary, Isle of Mull, "Lord Arthur" (581).

EXTRA STOCK.

The following were Very Highly Commended, £5 and Medium Silver Medals awarded:—

- No. 747 J. Douglas Fletcher of Rosehaugh, Avoch, "Glenbruar" (331).
 No. 752 J. H. Munro Mackenzie of Calgary, Isle of Mull, "Islesman" (253).
 No. 751 Lord Middleton, Birdsall, Malton, Yorkshire, "Comaraich" (385).

CLASS 90. HIGHLAND PONY ENTIRE COLT, foaled after 1st January 1911.—Premiums, £8, £4, and £2.

- 1st No. 753 The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Tilt Laddie" (603).
 2nd No. 762 C. W. Dyson Perrins of Ardross, Ardross Castle, Alness, "Rob Roy."
 3rd No. 759 Mrs M. M. Cheape, Carsaig and Tiroran, Pennyghael, Isle of Mull, "Prince Charlie" (653).
 V No. 760 James Douglas Fletcher of Rosehaugh, Avoch, Ross-shire, "Glengoeynack."
 H No. 756 Ian Bullough, Meggernie Castle, Aberfeldy, "Glencallater."
 C No. 761 The Marquis of Graham, C.B., Strabane, Brodick, Isle of Arran, "Isle of Arran Fionn" (627).

CLASS 91. HIGHLAND PONY MARE, of the heavy type, 3 years old or upwards, not exceeding 14.2 hands, Yeld or with Foal at foot.—Premiums, £8, £4, and £2.

- 1st No. 766 The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Lady Louise" (1530).
 2nd No. 767 The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Marjory" (1535).
 3rd No. 771 The Marquis of Graham, C.B., Strabane, Brodick, Isle of Arran, "Isle of Arran Morag" (2247).
 V No. 775 C. W. Dyson Perrins of Ardross, Ardross Castle, Alness, "Kate II." (2172).
 H No. 768 Andrew Brown, Auchallader, Bridge of Orchy, "Seonaid" (2270).
 C No. 770 Ian Bullough, Meggernie Castle, Aberfeldy, "Rose."
 C No. 774 William Dalziel Mackenzie of Farr, Daviot, Inverness, "Banchor" (2182).

CLASS 92. HIGHLAND PONY MARE, of the light type, 3 years old or upwards, not exceeding 14.2 hands, Yeld or with Foal at foot.—Premiums, £8, £4, and £2.

- 1st No. 777 Mrs M. M. Cheape, Carsaig and Tiroran, Pennyghael, Isle of Mull, "Dunnie II." (2302).
 2nd No. 781 Lord Middleton, Birdsall, Malton, Yorkshire, "Polly of Poolewe" (2385).
 3rd No. 778 James Douglas Fletcher of Rosehaugh, Avoch, Ross-shire, "Phoenix" (2451).
 V No. 779 J. A. Ranald Macdonald of Balranald, Lochmaddy, North Uist, "Brenda" (2307).
 H No. 780 J. H. Munro Mackenzie of Calgary, Isle of Mull, "Torloisk" (2294).

CLASS 93. HIGHLAND PONY FILLY, foaled after 1st January 1911.—Premiums, £8, £4, and £2.

- 1st No. 782 James M. Cairns, Coulshill, Auchterarder, "Calliach Bhan III." (2309).
 2nd No. 785 John Macdonald, Glenbrittle, Isle of Skye, "May Dew."
 3rd No. 786 C. W. Dyson Perrins of Ardross, Ardross Castle, Alness, "Bluebell."
 V No. 783 Mrs M. M. Cheape, Carsaig and Tiroran, Pennyghael, Isle of Mull, "Flora MacDonald" (2441).

SHETLAND PONIES.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Shetland Pony.

No. 796 William Mungall of Transy, Dunfermline, "Selwood of Transy" (619).

Silver Medal to the Breeder of best Shetland Pony.

No. 796 William Mungall of Transy, Dunfermline.

Group of Shetland Ponies, consisting of one male and two females, exhibited in the ordinary Classes, and entered or eligible for entry in the Shetland Pony Stud-Book.—Piece of Silver Plate, value £20, given by Lady Dixon, Hillsborough Castle, Co. Down.

Mrs Etta Duffus, Penniwells, Elstree, Herts—Nos. 799, 810, 832.

CLASS 94. STALLION, not exceeding 10½ hands, foaled before 1910.—
 Premiums, £8, £5, £3, and £2.

- 1st No. 788 J. W. Mackie Adamson, Duncrevie, Glenfarg, "Belmont of Earls hall."
 2nd No. 793 William Mungall of Transy, Dunfermline, "Silverdale of Transy" (620).
 3rd No. 789 Charles Douglas of Auchlochan, Lesmahagow, "Everlasting of Auchlochan."
 4th No. 791 R. W. R. Mackenzie, Earls hall, Leuchars, "Bridegroom" (400).
 V No. 787 J. W. Mackie Adamson, Duncrevie, Glenfarg, "Gold Dust of Earls hall."
 H No. 795 David Stewart, Blantyre Park, High Blantyre, "Major O'Meara" (555).
 C No. 792 R. W. R. Mackenzie, Earls hall, Leuchars, "Radnor, King."
 C No. 794 Colonel Smythe, Methven, Perth, "Beau Brocade."

EXTRA STOCK.

The following was Very Highly Commended, and a Medium Silver Medal awarded:—

No. 796 William Mungall of Transy, Dunfermline, "Selwood of Transy" (619).

The following was Highly Commended, and a Medium Silver Medal awarded:—

No. 790 James Douglas Fletcher of Rosehaugh, Avoch, "Merry Hero" (244).

CLASS 95. ENTIRE COLT, not exceeding 10½ hands, foaled in 1910 or 1911.—
 Premiums, £8, £5, £3, and £2.

- 1st No. 799 Mrs Etta Duffus, Penniwells, Elstree, Herts, "May King of Penniwells."
 2nd No. 805 William Mungall of Transy, Dunfermline, "Solano of Transy."
 3rd No. 798 Charles Douglas of Auchlochan, Lesmahagow, "Dreadnought of Auchlochan."
 4th No. 801 Miss J. T. Irvine Fortescue, Mondynes, Fordoun, "Peveril."
 V No. 803 R. W. R. Mackenzie, Earls hall, Leuchars, "Dormer of Earls hall."
 H No. 797 Henry Dickie, Seafield, Inverkeithing, "Seafield Oliver."
 C No. 802 R. W. R. Mackenzie, Earls hall, Leuchars, "Bandisole."

CLASS 96. MARE, not exceeding 10½ hands, with Foal at foot.—
 Premiums, £8, £5, £3, and £2.

- 1st No. 810 Mrs Etta Duffus, Penniwells, Elstree, Herts, "Floreat" (2447).
 2nd No. 815 William Mungall, of Transy, Dunfermline, "Severign" (1730).
 3rd No. 816 William Mungall, of Transy, Dunfermline, "Sheina of Transy" (2863).
 4th No. 809 Charles Douglas, of Auchlochan, Lesmahagow, "Eels of Auchlochan."
 V No. 813 R. W. R. Mackenzie, Earls hall, Leuchars, "Brightness of Earls hall" (2734).
 H No. 817 William Mungall, of Transy, Dunfermline, "Bramhope Veno" (2758).
 C No. 814 William Mathewson, Middlebank, Dunfermline, "Monica."

CLASS 97. YELD MARE, not exceeding 10½ hands.—
 Premiums, £8, £5, £3, and £2.

- 1st No. 828 David Stewart, Blantyre Park, High Blantyre, "Roma of Blantyre" (2543).
 2nd No. 820 Charles Douglas, of Auchlochan, Lesmahagow, "Primavera of Auchlochan."
 3rd No. 826 William Mungall, of Transy, Dunfermline, "Danish Queen" (1424).
 4th No. 822 Patrick Graham, Kittochside, Busby, "Bellabout" (2710).
 V No. 824 R. W. R. Mackenzie, Earls hall, Leuchars, "Norma of Whitehall."
 H No. 819 Miss and E. S. Arthur, Montgomerie, Tarbolton, "Pattern of Auchlochan."
 C No. 821 James Douglas Fletcher, of Rosehaugh, Avoch, Ross-shire, "Rosehaugh Baba" (513 I.S.).
 C No. 827 William Mungall, of Transy, Dunfermline, "Starstone."

CLASS 98. FILLY, not exceeding 10½ hands, foaled in 1910 or 1911.—
 Premiums, £8, £5, £3, and £2.

- 1st No. 837 William Mungall, of Transy, Dunfermline, "Thorna of Transy."
 2nd No. 830 Charles Douglas, of Auchlochan, Lesmahagow, "Bellona of Auchlochan."
 3rd No. 832 Mrs Etta Duffus, Penniwells, Elstree, Herts, "May Queen of Penniwells."
 4th No. 840 David Stewart, Blantyre Park, High Blantyre, "Royal Coronation."
 V No. 839 Carl Scott, Auchmore, Ayr, "Tootles" (893).
 H No. 831 Charles Douglas, of Auchlochan, Lesmahagow, "Pomona of Auchlochan."
 C No. 835 William Mathewson, Middlebank, Dunfermline, "Dowry."
 C No. 836 William Mathewson, Middlebank, Dunfermline, "Nesta of Comrie."
 C No. 838 William Mungall, of Transy, Dunfermline, "Susan of Transy."

HORSES IN HARNESS.

PRESIDENT'S CHAMPION MEDAL for best animal in the Classes for Horses in Harness.

- No. 842 H. Le Marchant, Elmwood, East Croydon, Surrey, Gelding, "Gaythorn."

Silver Medal to the Breeder of best animal in the Classes for Horses in Harness.

- No. 842 James Prentice, Carolside, Uddingston.

Champion Prize of Twenty Guineas for best animal in the Harness Classes, shown in competition for this Prize, in single harness.

- No. 842 H. Le Marchant, Elmwood, East Croydon, Surrey, Gelding, "Gaythorn."

CLASS 99. MARE or GELDING, over 15 hands.—Premiums, £20, £10, and £5.

- 1st No. 842 H. Le Marchant, Elmwood, East Croydon, Surrey, Gelding, "Gaythorn."
 2nd No. 843 M'Call Brothers, Burnhead Stud, Kilsyth, Mare, "Burnhead Lady Champion" (21,902).

EXTRA STOCK.

(Not forward.)

CLASS 100. MARE or GELDING, over 14 and not exceeding 15 hands.—
 Premiums, £20, £10, and £5.

- 1st No. 846 Robert Black, Muncaster House, York, Mare, "Happy May" (17,853).
 2nd No. 853 Philip Smith, Haddon House, Ashton-on-Mersey, Mare, "Queen of Ayr" (20,178).
 3rd No. 854 Philip Smith, Haddon House, Ashton-on-Mersey, Mare, "Melbourne Princess" (19,347).
 V No. 848 J. G. Chrystal, Bloomhill, Cardross, Mare, "Pearlia."
 H No. 856 John Wotherspoon, The Cairns, Cambuslang, Mare, "Melbourne Lady" (21,537).
 C No. 851 Enoch Glen, Fallside Hackney and Pony Stud, Bathgate, Mare, "Clyde Iris" (21,283).

CLASS 101. MARE or GELDING, 14 hands and under.—
 Premiums, £15, £10, and £5.

- 1st No. 857 Robert Black, Muncaster House, York, Gelding, "The Swell."
 2nd No. 718 J. E. Kerr of Harviestoun Castle, Dollar, Mare, "Glenavon Pride" (20,681).
 3rd No. 717 Enoch Glen, Fallside Hackney and Pony Stud, Bathgate, Gelding, "Glenavon Masterpiece."
 V No. 858 Hugh Leggat, Cross Arthurlie House, Barrhead, Mare, "Arthurlie Golden Promise" (22,376).
 H No. 721 James M'Morran, 12 Clarkston Road, Cathcart, Glasgow, Gelding, "Claremont Prince."

CLASS 102. PAIR MARES or GELDINGS, in double Harness, any height.—
 Premiums, £20, £10, and £5.

- 1st { No. 853 } Philip Smith, Haddon House, Ashton-on-Mersey, Mare, "Queen of Ayr" (20,178).
 { No. 854 } Philip Smith, Haddon House, Ashton-on-Mersey, Mare, "Melbourne Princess" (19,347).
 2nd { No. 848 } J. G. Chrystal, Bloomhill, Cardross, Mare, "Pearlia."
 { No. 849 } J. G. Chrystal, Bloomhill, Cardross, Mare, "Sapphire."
 { No. 721 } James M'Morran, 12 Clarkston Road, Cathcart, Glasgow, Gelding, "Claremont Prince."
 3rd { No. 726 } James M'Morran, 12 Clarkston Road, Cathcart, Glasgow, Mare, "Claremont Princess."

CLASS 103. PAIR MARES or GELDINGS, driven tandem, any height.—
 Premiums, £20, £10, and £5.

- 1st { No. 853 } Philip Smith, Haddon House, Ashton-on-Mersey, Mare, "Queen of Ayr" (20,178).
 { No. 854 } Philip Smith, Haddon House, Ashton-on-Mersey, Mare, "Melbourne Princess" (19,347).
 2nd { No. 721 } James M'Morran, 12 Clarkston Road, Cathcart, Glasgow, Gelding, "Claremont Prince."
 { No. 726 } James M'Morran, 12 Clarkston Road, Cathcart, Glasgow, Mare, "Claremont Princess."

DRAUGHT GELDINGS.

CLASS 104. DRAUGHT GELDING, any age, in Harness, shown in cart or lorry, it being a condition that the horses must have been regularly worked for a period of twelve weeks prior to the first day of the Show—the horses to be exhibited on Thursday, 10th July only, the prize-winners to take part, if required, in both parades on Thursday and Friday.—Prizes, £10, £6, and £4, contributed from the late Provost Muir MacKean's Fund.

- 1st No. —(501) Alexander Clark, Newton Farm, Markinch, "Sir John."
 2nd No. 860 Scottish Co-operative Wholesale Society, Ltd., 95 Morrison Street, Glasgow, "Hector."
 3rd No. —(498) Peter Beaton, 15 Craufurd Street, Greenock.
 V No. —(861) Scottish Co-operative Wholesale Society, Ltd., 95 Morrison Street, Glasgow, "Johnnie."

VAN HORSES.

CLASS 105. MARE or GELDING, three years old and upwards, suited for heavy van purposes, shown in trade van, to be exhibited on Thursday, 10th July only, the winners to take part, if required, in both parades on Thursday and Friday. —Prizes, £10, £6, and £4, contributed from the late Provost Muir MacKean's Fund.

- 1st No. 863 Alloa Co-operative Society, Ltd., 11 Primrose Street, Alloa, Gelding, "Tolt of Alloa."
 2nd No. 867 Scottish Co-operative Wholesale Society, Ltd., 95 Morrison Street, Glasgow, Gelding, "Bob."
 3rd No. 866 Scottish Co-operative Wholesale Society, Ltd., 95 Morrison Street, Glasgow, Gelding.

CLASS 106. MILK TURN-OUT, belonging to a Tenant Farmer in the County of Renfrew, which Turn-out has been regularly used for the purpose of his trade for at least one month prior to the Show, to be exhibited on Thursday, 10th July only, the winners to take part, if required, in both parades on Thursday and Friday. —Prizes, £8, £5, and £3, contributed from the late Provost Muir MacKean's Fund.

- 1st No. 869 Hugh Russell, Foxbar Farm, Paisley, Gelding, "Prince."
 2nd No. 868 John Adam, East Walkinshaw, Renfrew, Mare, "Daisy."

ARMY REMOUNT CLASSES.

CLASS 107. MARE or GELDING, suitable for Artillery and Transport Draught purposes—to be shown in hand. Height about 15.2. Stamp of horse to carry a man riding postilion, and able to walk and trot well. —Prizes, £10, £5, £3, and £2, given by the Territorial Force Association of the County of Renfrew.

- 1st No. 871 D. Aird, Jobmaster, Kilmarnock, Gelding.
 2nd No. 870 Robert Adam, Sibo Cottage, Uplawmoor, Gelding, "Prince."
 3rd No. 873 D. Aird, Jobmaster, Kilmarnock, Mare.
 4th No. 875 J. L. Young, 41 Gordon Street, Paisley, Gelding.
 V No. —(869) Hugh Russell, Foxbar Farm, Paisley, Gelding, "Prince."

CLASS 108. MARE or GELDING, suitable for Cavalry of the Line, able to carry about 16 stone—to be shown in saddle. Height about 15.2. —Prizes, £10, £5, £3, and £2, contributed from the late Provost Muir MacKean's Fund.

- 1st No. 878 D. Aird, Jobmaster, Kilmarnock, Mare.
 2nd No. —(672) John Hunter & Sons, Langlands, Tarbolton, Gelding, "Gay Boy."

JUMPING COMPETITIONS

Champion Prize of £10 for the most points in Prizes with one or more Horses in Classes 1, 4, and 5.

CONDITIONS.—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; Fifth Prize, one point. The money to be evenly divided in the event of a tie.

F. V. Grange, Alvaston, Nantwich, Cheshire.

Wednesday, 9th July.

CLASS 1. HORSE or PONY, any height.—Premiums, £20, £15, £10, £5, and £3.

- 1st Captain R. M. Stewart-Richardson, 11th Hussars, Aldershot, Gelding, "Dan Leno," chestnut.
 2nd William Trail, Riding Academy, Aberdeen, Gelding, "Aviator."
 3rd F. V. Grange, Alvaston, Nantwich, Cheshire, Gelding, "Northdown."
 4th William Johnston, Bredisholm, Baillieston, Gelding, "Biplane," bay.
 5th T. & H. Ward, Pinchinthorpe, Guisboro', Yorks, Gelding, "Fisherman," bay.

Thursday, 10th July.

CLASS 2. HUNTER, the property of a subscriber to any recognised Pack of Hounds in Scotland, and which has been fairly ridden to hounds in any country during season 1912-1913 by its owner. The winner to receive Silver Cup, value £25, presented by Miss Stewart Clark, Dreghorn Castle, Colinton. Prizes, £10 and Cup, £10, and £5, contributed from the late Provost Muir MacKean's Fund.

- 1st George Barclay, Thornhill, Johnstone, Gelding, "Prince," chestnut.
- 2nd Miss L. Carnegie, Pitcorthie, Colinsburgh, Gelding, "Jerome," black, 7 years.
- 3rd James L. Young, 41 Gordon Street, Paisley, Gelding, "Gordon," brown.
- V John Baird, M.R.C.V.S., Dumfries, Mare, "Lady Gordon," brown, 5 years.
- C John Service, Tontine Hotel, Greenock, Gelding, "Kildare," brown.

CLASS 3. POLO PONY SERPENTINE BENDING TEST.—Prizes, £5, £3, and £2, contributed from the late Provost Muir MacKean's Fund.

(CLASS ABANDONED.)

Thursday Evening, 10th July.

CLASS 4. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1.—Premiums, £10, £8, £5, £3, and £2.

- 1st F. V. Grange, Alvaston, Nantwich, Cheshire, Gelding, "Monarch."
- 2nd William Johnston, Bredisholm, Baillieston, Gelding, "Biplane," bay.
- 3rd Captain R. M. Stewart-Richardson, 11th Hussars, Aldershot, Gelding, "Dan Leno," chestnut.
- 4th T. & H. Ward, Pinchinthorpe, Guisboro', Yorks, Gelding, "Fisherman," bay.
- 5th Frank Allison, 1 Bondgate, Selby, Yorks, Mare, "Temptress," brown.

Friday, 11th July.

CLASS 5. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 4—4 inches extra for the winner of the two first prizes in Classes 1 and 4.—Premiums, £10, £8, £5, £3, and £2.

- 1st F. V. Grange, Alvaston, Nantwich, Cheshire, Gelding, "Northdown."
- 2nd T. & H. Ward, Pinchinthorpe, Guisboro', Yorks, Gelding, "Fisherman," brown.
- 3rd Captain R. M. Stewart-Richardson, 11th Hussars, Aldershot, Gelding, "Dan Leno," chestnut.
- 4th and 5th { Frank Allison, 1 Bondgate, Selby, Yorks, Mare, "Temptress," brown } equal.
- 5th { F. V. Grange, Alvaston, Nantwich, Cheshire, Gelding, "Monarch," }

SHEEP**BLACKFACE.**

PRESIDENT'S CHAMPION MEDAL for best animal of Blackface breed.

No. 928 M. G. Hamilton, Woolfords, Cobbinshaw.

Silver Medal to the Breeder of best Blackface Animal.

No. 928 M. G. Hamilton, Woolfords, Cobbinshaw.

Renfrewshire Perpetual Gold Challenge Cup, value £250, for best animal of the Blackface breed. This Cup, along with an endowment of £500, has been provided from money collected in Renfrewshire by the late Provost Muir MacKean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrewshire in 1913.

No. 928 M. G. Hamilton, Woolfords, Cobbinshaw.

Blackface Tup, entered in the ordinary Classes, growing the best wool for manufacturing purposes, free from black spots or kemp.—Prizes, £3 and £2, given by Mr J. Richmond, Kippenross.

- 1st No. 913 James Clark, Crossflatt, Muirkirk, "Flash."
2nd No. 906 W. & W. Anderson, Colzium, Kirknewton.

Best Group of Four Blackface Sheep, consisting of aged Tup, Shearling Tup, Ewe, and Shearling Ewe or Gimmer, drawn from Classes 109 to 113.—Prizes, £10, £5, and £3, contributed from the late Provost Muir MacKean's Fund.

- 1st Charles Cadzow, Borland, Dunsyre, Carstairs Junction.
2nd M. G. Hamilton, Woolfords, Cobbinshaw.
3rd James Clark, Crossflatt, Muirkirk.

CLASS 109. TUP, above one Shear.—Premiums, £12, £8, £4, and £2.

- 1st No. 894 M. G. Hamilton, Woolfords, Cobbinshaw.
2nd No. 883 Charles Cadzow, Borland, Dunsyre, Carstairs Junction.
3rd No. 897 D. M. MacRae of Stenhouse, Thornhill, Dumfriesshire, "Goldscott III."
4th No. 888 Messrs Cranstoun, Nunland, Dumfries, "Columba."
V No. 900 Octavius Monkhouse, Cowshill, Wearhead, Co. Durham.
H No. 886 Walter N. Cochrane, St John's Chapel, S.O., Co. Durham.
C No. 893 M. G. Hamilton, Woolfords, Cobbinshaw.

CLASS 110. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

- 1st No. 923 M. G. Hamilton, Woolfords, Cobbinshaw.
2nd No. 910 Charles Cadzow, Borland, Dunsyre, Carstairs Junction.
3rd No. 913 James Clark, Crossflatt, Muirkirk, "Flash."
4th No. 926 M. G. Hamilton, Woolfords, Cobbinshaw.
V No. 927 Thomas Hope, South Brownhill, Strathaven.
H No. 932 A. P. M'Dougall, High Craigton, Milngavie.
C No. 933 A. P. M'Dougall, High Craigton, Milngavie.

CLASS 111. EWE, above one Shear, with her Lamb at foot.—Premiums, £10, £5, and £2.

- 1st No. 954 James Dempster, Lambhill, Strathaven.
2nd No. 959 J. & A. C. Laurie, Dumbuck, Bowling.
3rd No. 967 A. G. Smart, Dalbog, Edzell.
V No. 966 A. G. Smart, Dalbog, Edzell.
H No. 949 Charles Cadzow, Borland, Dunsyre, Carstairs Junction.
C No. 951 James Clark, Crossflatt, Muirkirk, "Heather Bell."

CLASS 112. SHEARLING EWE or GIMMER.—Premiums, £10, £5, and £2.

- 1st No. 972 James Clark, Crossflatt, Muirkirk, "Bonnie Jean."
2nd No. 975 W. N. Cochrane, St John's Chapel, S.O., Co. Durham.
3rd No. 969 Charles Cadzow, Borland, Dunsyre, Carstairs Junction.
V No. 974 W. N. Cochrane, St John's Chapel, S.O., Co. Durham.
H No. 980 A. P. M'Dougall, High Craigton, Milngavie.
C No. 973 W. N. Cochrane, St John's Chapel, S.O., Co. Durham.

CLASS 113. BLACKFACE SHEARLING TUP, clipped on or after 1st March 1913, to be inspected by two neutral persons, and certified that no part of the animal has been clipped prior to said date.—Prizes, £12, £8, £4, and £2, given by Mr Charles Howatson of Glenbuck.

- 1st No. 993 M. G. Hamilton, Woolfords, Cobbinshaw.
2nd No. 988 James Clark, Crossflatt, Muirkirk.
3rd No. 992 M. G. Hamilton, Woolfords, Cobbinshaw.
4th No. 994 M. G. Hamilton, Woolfords, Cobbinshaw.

CLASS 114. BLACKFACE TUP LAMB, bred from a Ewe never out of the owner's possession.—Prizes, £3 and £2, given by Mr J. Richmond, Kippenross.

- 1st No. 1001 W. & W. Anderson, Colzium, Kirknewton.
2nd No. 1004 James Dempster, Lambhill, Strathaven.

CHEVIOT.

PRESIDENT'S CHAMPION MEDAL for best animal of the Cheviot breed.

- No. 1037 John Elliot, Hindhope, Jedburgh.

Silver Medal to the Breeder of best Cheviot Animal.

- No. 1037 John Elliot, Hindhope, Jedburgh.

Perpetual Challenge Cup, gifted by Mr Borthwick, value £25, for best Sheep in the Cheviot Classes—given by the Cheviot Sheep Society.

- No. 1037 John Elliot, Hindhope, Jedburgh.

CLASS 115. TUP, above one Shear.—Premiums, £12, £8, £4, and £2.

- 1st No. 1015 James S. Reid, Penchrise, Hawick.
2nd No. 1012 John Elliot, Hindhope, Jedburgh, "Coronation."
3rd No. 1009 Dobson & Murray, Parkhall, Douglas, Lanarkshire, "Gay Lad" (2309).
4th No. 1016 Jacob Robson, Byrness, Otterburn, Northumberland.
V No. 1013 H. D. Lorimer, Callands, West Linton.
H No. 1017 Jacob Robson, Byrness, Otterburn, Northumberland.
C No. 1018 John Robson, Millknowe, Duns.

CLASS 116. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

- 1st No. 1022 Dobson & Murray, Parkhall, Douglas, Lanarkshire.
2nd No. 1025 John Elliot, Hindhope, Jedburgh.
3rd No. 1027 John Elliot, Hindhope, Jedburgh.
4th No. 1030 Jacob Robson, Byrness, Otterburn, Northumberland.
V No. 1021 Dobson & Murray, Parkhall, Douglas, Lanarkshire.
H No. 1026 John Elliot, Hindhope, Jedburgh.
C No. 1024 Dobson & Murray, Parkhall, Douglas, Lanarkshire.
C No. 1032 John Robson, Millknowe, Duns.

CLASS 117. EWE, above one Shear, with her Lamb at foot.—Premiums, £10, £5, and £2.

- 1st No. 1037 John Elliot, Hindhope, Jedburgh.
2nd No. 1040 John Robson, Millknowe, Duns.
3rd No. 1038 Jacob Robson, Byrness, Otterburn, Northumberland.
V No. 1036 W. J. Dudgeon, Crakaig, Loth, Sutherland, "Winnie of Crakaig."
H No. 1035 Dobson & Murray, Parkhall, Douglas, Lanarkshire.
C No. 1041 John Robson, Millknowe, Duns.

CLASS 118. SHEARLING EWE or GIMMER.—Premiums, £10, £5, and £2.

- 1st No. 1049 John Robson, Millknowe, Duns.
2nd No. 1042 John S. Dickson, Flemington, Dolphinton.
3rd No. 1043 Dobson & Murray, Parkhall, Douglas, Lanarkshire.
V No. 1045 John Elliot, Hindhope, Jedburgh.
H No. 1046 John Elliot, Hindhope, Jedburgh.
C No. 1047 Jacob Robson, Byrness, Otterburn, Northumberland.

BORDER LEICESTER.

PRESIDENT'S CHAMPION MEDAL for best animal of Border Leicester breed.

No. 1054 J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Tops, Scremerston, Berwick-on-Tweed, "Wild Sir Matthew" (3453).

Silver Medal to the Breeder of best Border Leicester Animal.

No. 1054 T. & M. Templeton, Sandyknowe, Kelso.

Gold Medal for best male animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book—given by the Society of Border Leicester Sheep-Breeders.

No. 1054 J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Tops, Scremerston, Berwick-on-Tweed, "Wild Sir Matthew" (3453).

CLASS 119. TUP, above one Shear.—Premiums, £12, £8, £4, and £2.

- 1st No. 1054 J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Tops, Scremerston, Berwick-on-Tweed, "Wild Sir Matthew" (3453).
- 2nd No. 1056 R. G. Murray & Son, Spittal, Biggar, "Galalaw Mystery" (3300).
- 3rd No. 1052 The Duke of Buccleuch and Queensberry, K.G., K.T., Dalkeith Park, Dalkeith, "Lucky King" (2859).
- 4th No. 1051 The Right Hon. A. J. Balfour, M.P., of Whittingehame, Prestonkirk.
- V No. 1053 James Campbell & Sons, Illieston, Mid-Calder.
- C No. 1055 John Kinnaird, jun., New Mains, Stenton, Prestonkirk.

EXTRA STOCK.

The following was Commended, and a Bronze Medal awarded :—

No. 1057 James Campbell & Sons, Illieston, Mid-Calder.

The following was Highly Commended, and a Medium Silver Medal awarded :—

No. 1058 R. G. Murray & Son, Spittal, Biggar, "Smallholm Model" (2664).

CLASS 120. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

- 1st No. 1084 J. D. Hay, Glenearn, Bridge of Earn, Perthshire.
- 2nd No. 1091 R. G. Murray & Son, Spittal, Biggar.
- 3rd No. 1092 R. G. Murray & Son, Spittal, Biggar.
- 4th No. 1079 David P. Elliot, Nisbet Hill, Duns.
- V No. 1075 Lord Ninian Crichton-Stuart, M.P., House of Falkland, Falkland, Fife.
- H No. 1094 D. & W. Wallace, Auchinbrain, Mauchline.
- C No. 1067 Archibald Cameron & Sons, Westside Farm, Brechin.
- C No. 1073 J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Tops, Scremerston, Berwick-on-Tweed.
- C No. 1081 James Findlay, Newmiln of Craigeassie, Forfar.

Gold Medal for best female animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book—given by the Society of Border Leicester Sheep-Breeders.

No. 1189 R. G. Murray & Son, Spittal, Biggar.

CLASS 121. EWE, above one Shear.—Premiums, £10, £5, and £2.

- 1st No. 1107 R. G. Murray & Son, Spittal, Biggar.
 2nd No. 1101 James Campbell & Sons, Illieston, Mid-Calder.
 3rd No. 1102 J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Tops,
 Scremerston, Berwick-on-Tweed, "N 20."
 V No. 1108 R. G. Murray & Son, Spittal, Biggar.
 H No. 1106 J. Gardyne Hunter, Horn, Errol.
 C No. 1099 His Grace the Duke of Buccleuch, K.G., K.T., Dalkeith Park,
 Dalkeith.

CLASS 122. SHEARLING EWE or GIMMER.—Premiums, £10, £5, and £2.

- 1st No. 1139 R. G. Murray & Son, Spittal, Biggar.
 2nd No. 1118 Archibald Cameron & Sons, Westside Farm, Brechin.
 3rd No. 1124 Lord Ninian Crichton-Stuart, M.P., House of Falkland, Falkland,
 Fife.
 V No. 1122 J. Evelyn Carr, The Scremerston Coal Co., Ltd., Heathery Tops,
 Scremerston, Berwick-on-Tweed, "O 32."
 H No. 1138 R. G. Murray & Son, Spittal, Biggar.
 C No. 1136 John Kinnaird, jun., Newmains, Stenton, Prestonkirk.
 C No. 1119 James Campbell & Sons, Illieston, Mid-Calder.
 C No. 1126 R. & W. B. Dickinson, Longcroft, Oxtou, Berwickshire.

HALF-BRED.***PRESIDENT'S CHAMPION MEDAL for best Half-Bred Animal.***

- No. 1146 John Mark, Sunnyside, Prestonkirk.

Silver Medal to the Breeder of best Half-Bred Animal.

- No. 1146 John Stewart, Stoneypath, Prestonkirk.

CLASS 123. TUP, above one Shear.—Premiums, £12, £8, £4, and £2.

- 1st No. 1143 W. W. Burdon, Wooperton, R.S.O., Northumberland.
 2nd No. 1142 W. W. Burdon, Wooperton, R.S.O., Northumberland.

CLASS 124. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

- 1st No. 1146 John Mark, Sunnyside, Prestonkirk.
 2nd No. 1145 David P. Elliot, Nisbet Hill, Duns.
 3rd No. 1144 David P. Elliot, Nisbet Hill, Duns.
 4th No. 1148 John Mark, Sunnyside, Prestonkirk.
 V No. 1149 John Mark, Sunnyside, Prestonkirk.
 H No. 1147 John Mark, Sunnyside, Prestonkirk.

CLASS 125. EWE, above one Shear.—Premiums, £10, £5, and £2.

- 1st No. 1150 John Stewart, Saughland, Tynehead.

CLASS 126. SHEARLING EWE or GIMMER.—Premiums, £10, £5, and £2.

- 1st No. 1151 W. W. Burdon, Wooperton, R.S.O., Northumberland.
 2nd No. 1153 John Stewart, Saughland, Tynehead.
 3rd No. 1152 W. W. Burdon, Wooperton, R.S.O., Northumberland.

SHROPSHIRE.***PRESIDENT'S CHAMPION MEDAL for best Shropshire Animal.***

- No. 1159 Thomas A. Buttar, Corston, Coupar-Angus.

Silver Medal to the Breeder of best Shropshire Animal.

- No. 1159 Thomas A. Buttar, Corston, Coupar-Angus.

CLASS 127. SHEARLING TUP.—Premiums, £6, £4, and £2.

- 1st No. 1158 Lord Ninian Crichton-Stuart, M.P., House of Falkland, Falkland,
Fife.
2nd No. 1157 Thomas A. Buttar, Corston, Coupar-Angus.
3rd No. 1156 Thomas A. Buttar, Corston, Coupar-Angus.
V No. 1155 Thomas A. Buttar, Corston, Coupar-Angus.

CLASS 128. SHEARLING EWE or GIMMER.—Premiums, £5, £3, and £2.

- 1st No. 1159 Thomas A. Buttar, Corston, Coupar-Angus.
2nd No. 1160 Thomas A. Buttar, Corston, Coupar-Angus.
3rd No. 1161 Thomas A. Buttar, Corston, Coupar-Angus.
V No. 1162 Lord Ninian Crichton-Stuart, M.P., House of Falkland, Falkland,
Fife.

OXFORD-DOWN.

PRESIDENT'S CHAMPION MEDAL for best Oxford Down Animal.

- No. 1163 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.

Silver Medal to the Breeder of best Oxford-Down Animal.

- No. 1163 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.

Best Shearling Oxford-Down Tup in Class 129 bred in Scotland, to be registered in Oxford-Down Flock-Book before prizes will be paid—£5, £3, and £2, given by Oxford-Down Sheep-Breeders' Association.

- 1st No. 1163 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.
2nd No. 1167 William Elliot, Raecleugh Head, Duns.
3rd No. 1165 William Elliot, Raecleugh Head, Duns.

CLASS 129. SHEARLING TUP.—Premiums, £6, £4, and £2.

- 1st No. 1163 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.
2nd No. 1167 William Elliot, Raecleugh Head, Duns.
3rd No. 1165 William Elliot, Raecleugh Head, Duns.
V No. 1164 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.
H No. 1166 William Elliot, Raecleugh Head, Duns.
H No. 1168 H. B. Ireland, Ballindean, Kilmany.

EXTRA STOCK.

The following was Very Highly Commended, and a Medium Silver Medal awarded :—

- No. 1170 James R. M'Hardy, Bructor, Inverurie, "Lord Inverurie" (7404).

CLASS 130. SHEARLING EWE or GIMMER.—Premiums, £5, £3, and £2.

- 1st No. 1172 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.
2nd No. 1171 The Right Hon. A. J. Balfour, M.P., Whittingehame, Prestonkirk.
3rd No. 1175 John Robertson, Ladyrig, Roxburgh.
V No. 1173 H. B. Ireland, Ballindean, Kilmany.
H No. 1174 H. B. Ireland, Ballindean, Kilmany.

SUFFOLK.

PRESIDENT'S CHAMPION MEDAL for best Suffolk Sheep.

- No. 1198 Allan Grant, Wester Alves, Alves, Forres, "Alves Earl 3rd."

Silver Medal to the Breeder of best Suffolk Animal.

- No. 1198 Allan Grant, Wester Alves, Alves, Forres.

CLASS 131. SHEARLING TUP.—Premiums, £6, £4, and £2.

- 1st No. 1177 Allan Grant, Wester Alves, Alves, Forres, "Alves Earl."
 2nd No. 1179 John Robertson, Ladyrig, Roxburgh.
 3rd No. 1176 T. K. Blackstock, Flatts of Cargen, Dumfries.
 V No. 1181 Wm. Vivers & Sons, Dornocktown, Annan.
 H No. 1182 Wm. Vivers & Sons, Dornocktown, Annan.

CLASS 132. SHEARLING EWE or GIMMER.—Premiums, £5, £3, and £2.

- 1st No. 1188 Allan Grant, Wester Alves, Alves, Forres, "Searsons Princess."
 2nd No. 1187 Allan Grant, Wester Alves, Alves, Forres, "Searsons Dainty."
 3rd No. 1186 Allan Grant, Wester Alves, Alves, Forres, "Lady Searsons."
 V No. 1190 John Robertson, Ladyrig, Roxburgh.
 H No. 1191 John Robertson, Ladyrig, Roxburgh.

EXTRA STOCK.

The following was Commended, and a Bronze Medal awarded :—

- No. 1198 Andrew B. Dalgety, Lochend, Forgandenny, Perthshire.

CLASS 133. TUP LAMB.—Premiums, £5, £3, and £2, given by the Suffolk Sheep Society.

- 1st No. 1198 Allan Grant, Wester Alves, Alves, Forres, "Alves Earl 3rd."
 2nd No. 1203 John Robertson, Ladyrig, Roxburgh.
 3rd No. 1201 James Provan, Wallacetown, Bridge of Earn.
 V No. 1202 John Robertson, Ladyrig, Roxburgh.
 H No. 1200 James Provan, Wallacetown, Bridge of Earn.
 C No. 1204 William Thomson, Tynet Mills, near Portgordon.

CLASS 134. THREE EWE LAMBS.—Premiums, £5, £3, and £2, given by the Suffolk Sheep Society.

- 1st No. 1210 Allan Grant, Wester Alves, Alves, Forres.
 2nd No. 1211 John Robertson, Ladyrig, Roxburgh.
 3rd No. 1209 Andrew B. Dalgety, Lochend, Forgandenny, Perthshire.
 C No. 1212 Wm. Vivers & Sons, Dornocktown, Annan.

FAT SHEEP.**CLASS 135. THREE FAT LAMBS, any Breed or Cross, dropped in the year of the Show.**—Premiums, £5, £3, and £2.

- 1st No. 1213 Allan Grant, Wester Alves, Alves, Forres (Suffolk Crosses).
 2nd No. 1214 John Robertson, Ladyrig, Roxburgh (Border Leicester Tup and Cross bred Ewes).

SWINE**PRESIDENT'S CHAMPION MEDAL for best Pen of Swine.**

- No. 1232 R. E. W. Stephenson, Tue Brook, Liverpool, "Tallington Companion" (29,914).

Silver Medal to the Breeder of best Pen of Swine.

- No. 1232 W. E. Measures, Tallington, Stamford.

LARGE WHITE BREED.**CLASS 136. BOAR, farrowed before 1912.**—Premiums, £6, £3, and £2.

- 1st No. 1217 R. E. W. Stephenson, Tue Brook, Liverpool, "Roger of Tholthorpe" (18,987).
 2nd No. 1215 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh, "Craigcrook King VIII." (14,817).
 3rd No. 1216 Thomas Simpson, Duddingston Farm, Portobello, Edinburgh, "Earl of Worsley II." (18,561).
 V No. 1218 James Wyllie, Mayfield, Stevenston, "Mayfield What's Wanted" (15,123).

EXTRA STOCK.

The following was Very Highly Commended, and a Medium Silver Medal awarded :—

No. 1219 Andrew Symon, Rogerfield, Easterhouse, near Baillieston, "King of the Groves" (15,079).

CLASS 137. BOAR, farrowed in 1912.—Premiums, £6, £3, and £2.

- 1st No. 1220 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh, "Craigcrook Ringmaster II." (16,051).
 2nd No. 1223 James Wyllie, Mayfield, Stevenston, "Mayfield Research."
 3rd No. 1222 A. E. Todd, Stoneybank, Musselburgh, "Bottesford Radiance."

CLASS 138. BOAR, farrowed in 1913.—Premiums, £4, £2, and £1.

- 1st No. 1227 A. E. Todd, Stoneybank, Musselburgh.
 2nd No. 1224 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh.
 3rd No. 1226 Thomas Simpson, Duddingston Farm, Portobello, Edinburgh.
 V No. 1225 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh.
 H No. 1230 James Wyllie, Mayfield, Stevenston.
 C No. 1229 A. E. Todd, Stoneybank, Musselburgh.

CLASS 139. SOW, farrowed before 1912.—Premiums, £6, £3, and £2.

- 1st No. 1232 R. E. W. Stephenson, Tue Brook, Liverpool, "Tallington Companion" (29,914).
 2nd No. 1231 Thomas Simpson, Duddingston Farm, Portobello, Edinburgh, "Duddingston Madge" (28,262).
 3rd No. 1235 James Wyllie, Mayfield, Stevenston, "Mayfield Mabel VI." (32,574).
 V No. 1234 James Wyllie, Mayfield, Stevenston, "Mayfield Favourite" (32,570).
 H No. 1233 James Wyllie, Mayfield, Stevenston, "Mayfield Rose."

CLASS 140. SOW, farrowed in 1912.—Premiums, £6, £3, and £2.

- 1st No. 1240 R. E. W. Stephenson, Tue Brook, Liverpool, "West Derby Choice Lass VIII." (36,288).
 2nd No. 1237 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh, "Craigcrook Perfection XXVI."
 3rd No. 1242 James Wyllie, Mayfield, Stevenston, "Mayfield Mabel XIII." (35,628).
 V No. 1236 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh, "Ramsay Primrose XV." (35,892).
 H No. 1239 Thomas Simpson, Duddingston Farm, Portobello, Edinburgh, "Duddingston Gam" (35,208).
 C No. 1241 James Wyllie, Mayfield, Stevenston, "Mayfield Mabel XII." (35,626).

CLASS 141. SOW, farrowed in 1913.—Premiums, £4, £2, and £1.

- 1st No. 1247 A. E. Todd, Stoneybank, Musselburgh.
 2nd No. 1244 D. W. Gunn, Craigcrook Farm, Blackhall, Edinburgh.
 3rd No. 1250 James Wyllie, Mayfield, Stevenston.
 V No. 1245 Thomas Simpson, Duddingston Farm, Portobello, Edinburgh.
 H No. 1249 James Wyllie, Mayfield, Stevenston.
 C No. 1248 A. E. Todd, Stoneybank, Musselburgh.

MIDDLE WHITE BREED.

CLASS 142. BOAR, any age.—Premiums, £4 and £2.

- 1st No. 1251 Leopold C. Paget, Middlethorpe Hall, York, "Banker of Castlecroft" (12,995).

CLASS 143. BOAR, farrowed in 1913.—Premiums, £4 and £2.

- 1st No. 1253 Leopold C. Paget, Middlethorpe Hall, York.
 2nd No. 1252 Leopold C. Paget, Middlethorpe Hall, York.

CLASS 144. SOW, any age.—Premiums, £4 and £2.

- 1st No. 1255 Leopold C. Paget, Middlethorpe Hall, York, "Halsnead Rose VI."
(34,074).
2nd No. 1254 Leopold C. Paget, Middlethorpe Hall, York, "Wharfedale Joyful"
(31,056).

CLASS 145. SOW, farrowed in 1913.—Premiums, £4 and £2.

- 1st No. 1257 Leopold C. Paget, Middlethorpe Hall, York.
2nd No. 1256 Leopold C. Paget, Middlethorpe Hall, York.

BERKSHIRE.

CLASS 146. BOAR, any age.—Premiums, £4 and £2.

(*Not forward.*)

CLASS 147. BOAR, farrowed in 1913.—Premiums, £4 and £2.

(*Not forward.*)

CLASS 148. SOW, any age.—Premiums, £4 and £2.

(*Not forward.*)

CLASS 149. SOW, farrowed in 1913.—Premiums, £4 and £2.

- 1st No. 1262 Andrew Symon, Rogerfield, Easterhouse, Baillieston.

POULTRY

First Premium—*One Sovereign*. Second Premium—*Ten Shillings*. Where there are Six or more Entries, Third Premium—*Five Shillings*.

CHAMPION MEDALS.

1. *Best Cock, any variety.*

- No. 71 Alexander Ollar, Kilkerran Cottage, Campbeltown.

2. *Best Hen, any variety.*

- No. 309 Tom H. Furness, Carlton House, Chesterfield (Silver).

3. *Best Cockerel, any variety.*

- No. 191 Walter Bradley, Homelea Poultry Farm, Errol.

4. *Best Pullet, any variety.*

- No. 37 Charles Aitkenhead, Stud Farm, Seaham Harbour.

5. *Best Pen of Ducks.*

- No. 496 James Huntly & Son, Hirsell Poultry Farm, Coldstream.

6. *Best Pen of Geese.*

- No. 528 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silcroft (Embsay).

7. *Best Pen of Turkeys.*

- No. 582 Miss Shanks, Broomhill, Denny (Bronze).

CLASS 1. DORKING—Coloured. Cock.

- 1st No. 1 Charles Aitkenhead, Stud Farm, Seaham Harbour.
 2nd No. 3 J. Brennand, Baldersby Park, Baldersby.
 C No. 4 J. T. Cathcart, Pitcairrie, Newburgh.

CLASS 2. DORKING—Coloured. Hen.

- 1st No. 9 John Mechie, Miller, Auchtermuchty.
 2nd No. 8 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 C No. 6 Charles Aitkenhead, Stud Farm, Seaham Harbour.

CLASS 3. DORKING—Coloured. Cockerel.

- 1st No. 14 William Marshall, Glenwhommie, Dunblane.
 2nd No. 13 William Marshall, Glenwhommie, Dunblane.
 C No. 10 J. Brennand, Baldersby Park, Baldersby.

CLASS 4. DORKING—Coloured. Pullet.

- 1st No. 19 J. A. & M. F. Smyth, The Lodge, Coleraine, Ireland.
 2nd No. 15 J. Brennand, Baldersby Park, Baldersby.
 C No. 17 William Marshall, Glenwhommie, Dunblane.

CLASS 5. DORKING—Silver Grey. Cock.

- 1st No. 24 John Mechie, Miller, Auchtermuchty.
 2nd No. 22 Thomas Davidson, The Kennels, Drummur Castle, Keith.
 3rd No. 20 J. Brennand, Baldersby Park, Baldersby.
 C No. 23 John Fulton, Poultry Yards, Collessie, Fife.

CLASS 6. DORKING—Silver Grey. Hen.

- 1st No. 28 John Fulton, Poultry Yards, Collessie, Fife.
 2nd No. 26 J. Brennand, Baldersby Park, Baldersby.
 C No. 29 James Ross, North Buthill, Burghead.

CLASS 7. DORKING—Silver Grey. Cockerel.

- 1st No. 31 R. Aitkenhead, Estate Office, Tongswood, Hawkhurst, Kent.
 2nd No. 32 J. Brennand, Baldersby Park, Baldersby.
 3rd No. 30 Charles Aitkenhead, Stud Farm, Seaham Harbour.
 H No. 33 Alexander Cross of Knockdon, Maybole.
 C No. 35 John Mechie, Miller, Auchtermuchty.

CLASS 8. DORKING—Silver Grey. Pullet.

- 1st No. 37 Charles Aitkenhead, Stud Farm, Seaham Harbour.
 2nd No. 43 John Mechie, Miller, Auchtermuchty.
 3rd No. 39 J. Brennand, Baldersby Park, Baldersby.
 H No. 38 R. Aitkenhead, Estate Office, Tongswood, Hawkhurst, Kent.
 C No. 42 Alexander Low, Gamekeeper's Cottage, Drum Castle, Drumoak.

CLASS 9. BRAHMAPOOTRA or COCHIN-CHINA. Cock.

- 1st No. 45 R. Anthony, Euxton, Chorley, Lancashire (Brahma).
 2nd No. 46 George Archibald, Blebocrags, Cupar (Brahma).
 3rd No. 48 John Fulton, Poultry Yards, Collessie, Fife (Cochin).
 H No. 47 George Archibald, Blebocrags, Cupar (Brahma).
 C No. 49 Henry Henry, 47 Buccleuch Street, Glasgow (Cochin).

CLASS 10. BRAHMAPOOTRA or COCHIN-CHINA. Hen.

- 1st No. 56 Malcolm M'Knight, Main Street, Dalmellington (Brahma).
 2nd No. 53 Robin Jackson, Badykes, Blantyre, Lanarkshire (Buff Cochin).
 3rd No. 57 David Reid, Firthview, Portgordon (Buff Cochin).
 H No. 55 T. & J. Lumsden, High Street, Strathmiglo (Brahma).
 C No. 58 Mrs Lilian M. Staunton, Monkton House, Monkton, Ayrshire (Brahma).

CLASS 11. BRAHMAPOOTRA or COCHIN-CHINA. Cockerel.

- 1st No. 61 Mrs Lillian M. Staunton, Monkton House, Monkton, Ayrshire (Brahma).
 2nd No. 59 R. Anthony, Euxton, Chorley, Lancashire (Brahma).

CLASS 12. BRAHMAPOOTRA or COCHIN-CHINA. Pullet.

- 1st No. 67 Mrs Lillian M. Staunton, Monkton House, Monkton, Ayrshire (Brahma).
 2nd No. 66 Mrs Lillian M. Staunton, Monkton House, Monkton, Ayrshire (Brahma).
 3rd No. 62 George Archibald, Blebocraggs, Cupar-Fife (Brahma).
 H No. 64 Henry Henry, 47 Buccleuch Street, Glasgow (Cochin).
 C No. 63 John Fulton, Poultry Yards, Collessie, Fife (Buff Cochin).

CLASS 13. SCOTCH GREY. Cock.

- 1st No. 71 Alexander Ollar, Kilkerran Cottage, Campbeltown.
 2nd No. 70 Alexander Ollar, Kilkerran Cottage, Campbeltown.
 3rd No. 73 William Ramsay, Muirhouse, Crosshouse.
 H No. 72 Alexander Ollar, Kilkerran Cottage, Campbeltown.
 C No. 69 Alexander Ollar, Kilkerran Cottage, Campbeltown.

CLASS 14. SCOTCH GREY. Hen.

- 1st No. 78 William Ramsay, Muirhouse, Crosshouse.
 2nd No. 75 Alexander Ollar, Kilkerran Cottage, Campbeltown.
 H No. 76 Alexander Ollar, Kilkerran Cottage, Campbeltown.
 C No. 77 William Ramsay, Muirhouse, Crosshouse.

CLASS 15. SCOTCH GREY. Cockerel.

- 1st No. 82 Miss Annie Ramsay, Muirhouse Farm, Crosshouse.
 2nd No. 81 Alexander Ollar, Kilkerran Cottage, Campbeltown.
 3rd No. 83 William Ramsay, Muirhouse, Crosshouse.
 H No. 84 Robert Strang, Halfway House, Paisley Road, Govan.
 C No. 79 Andrew Brodie, White House, Inchinnan Bridge.

CLASS 16. SCOTCH GREY. Pullet.

- 1st No. 91 John Retson, Langside Cottage, Lanark.
 2nd No. 90 William Ramsay, Muirhouse, Crosshouse.
 3rd No. 87 John Carswell, 148 Graham's Road, Falkirk.
 H No. 89 Miss Annie Ramsay, Muirhouse Farm, Crosshouse.
 C No. 85 Andrew Brodie, White House, Inchinnan Bridge.

CLASS 17. HAMBURG—Black. Cock.

- 1st No. 95 Charles E. Pickles, Kayfield House, Earby.
 2nd No. 96 Charles E. Pickles, Kayfield House, Earby.
 V No. 94 David Govan, Lilybank, Stonehouse, Lanarkshire.
 H No. 97 James Thomson, Stonefield Cottage, Paisley.
 C No. 93 Miss Coats, Corsebar, Paisley.

CLASS 18. HAMBURG—Black. Hen.

- 1st No. 100 Charles E. Pickles, Kayfield House, Earby.
 2nd No. 99 Charles E. Pickles, Kayfield House, Earby.
 V No. 98 David Govan, Lilybank, Stonehouse, Lanarkshire.

CLASS 19. HAMBURG—Any other Variety. Cock.

- 1st No. 104 Charles E. Pickles, Kayfield House, Earby (Silver Pencilled).
 2nd No. 101 John Ferguson, 7 Parkneuk, Dunfermline (Silver Spangle).
 V No. 103 Malcolm M'Kinnon, East King Street, Paisley (Silver Pencilled).
 H No. 102 David Govan, Lilybank, Stonehouse, Lanarkshire (Silver Spangle).

CLASS 20. HAMBURG—Any other Variety. Hen.

- 1st No. 109 Charles E. Pickles, Kayfield House, Earby (Silver Pencilled).
 2nd No. 105 Walter Bradley, Homelea Poultry Farm, Errol (Gold Pencilled).
 3rd No. 110 Charles E. Pickles, Kayfield House, Earby (Silver Spangle).
 V No. 106 David Govan, Lilybank, Stonehouse, Lanarkshire (Silver Spangle).
 H No. 108 Malcolm M'Kinnon, East King Street, Paisley (Gold Pencilled).
 C No. 107 Malcolm M'Kinnon, East King Street, Paisley (Gold Pencilled).

CLASS 21. HAMBURG—Any Variety. Cockerel.

- 1st No. 113 Charles E. Pickles, Kayfield House, Earby (Black).
 2nd No. 111 David Govan, Lilybank, Stonehouse, Lanarkshire (Silver Spangle).

CLASS 22. HAMBURG—Any Variety. Pullet.

- 1st No. 115 Charles E. Pickles, Kayfield House, Earby (Black).
 2nd No. 114 David Govan, Lilybank, Stonehouse, Lanarkshire (Silver Spangle).

CLASS 23. PLYMOUTH ROCK. Cock.

- 1st No. 119 J. Marsden Chandler, Fairfield, Brampton, Chesterfield.
 2nd No. 125 H. & W. M'Intyre, 17 Stormyland Street, Barrhead.
 3rd No. 122 Lord Leith of Fyvie, Home Farm, Fyvie.
 H No. 120 William Charles, Gammons, Rothienorman.
 C No. 124 John M'Intyre, 1 Greenhill Road, Paisley.
 C No. 117 Walter Bradley, Holmlea Poultry Farm, Errol.

CLASS 24. PLYMOUTH ROCK. Hen.

- 1st No. 128 J. Marsden Chandler, Fairfield, Brampton, Chesterfield.
 2nd No. 129 William Charles, Gammons, Rothienorman.
 3rd No. 133 Edward Muir, Sandyford, Monkton.
 V No. 126 Walter Bradley, Holmlea Poultry Farm, Errol.
 H No. 132 William Morgan, Balcurvie, Windygates.
 C No. 127 R. Cape & Co., Model Poultry Farm, Prestwick.

CLASS 25. PLYMOUTH ROCK. Cockerel.

- 1st No. 138 J. Marsden Chandler, Fairfield, Brampton, Chesterfield.
 2nd No. 135 Robert Arrol, 3 St James Terrace, Paisley.
 3rd No. 137 J. Brennand, Baldersby Park, Baldersby.
 H No. 141 Lord Leith of Fyvie, Home Farm, Fyvie.
 C No. 142 Edward Muir, Sandyford, Monkton.

CLASS 26. PLYMOUTH ROCK. Pullet.

- 1st No. 147 Lord Leith of Fyvie, Home Farm, Fyvie.
 2nd No. 145 Evan J. Edwards, Launceton, Kilmalcolm.
 3rd No. 143 J. Brennand, Baldersby Park, Baldersby.
 H No. 148 Lord Leith of Fyvie, Home Farm, Fyvie.
 C No. 150 A. Pollock, Poultry Yards, Muirpark.

CLASS 27. MINORCA. Cock.

- 1st No. 152 William Binnie, Harviestoun, Dollar.
 2nd No. 153 William Binnie, Harviestoun, Dollar.
 3rd No. 154 Walter Bradley, Homelea Poultry Farm, Errol.
 V No. 156 William H. Steven, Woodend, Helensburgh.
 H No. 157 James Weir, Brickhouse, New Abbey Road, Dumfries.
 C No. 155 David Gray, jun., Barmoorhill, Tarbolton.

CLASS 28. MINORCA. Hen.

- 1st No. 159 William Binnie, Harviestoun, Dollar.
 2nd No. 160 Walter Bradley, Homelea Poultry Farm, Errol.
 V No. 158 William Binnie, Harviestoun, Dollar.
 H No. 161 John Thomson, Middleholm, Lesmahagow.

CLASS 29. MINORCA. Cockerel.

1st No. 163	Walter Bradley, Homelea Poultry Farm, Errol.
2nd No. 168	John Thomson, Middleholm, Lesmahagow.
V No. 166	Thomas Miller, Kinnesswood, Kinross.
H No. 169	James Weir, Brickhouse, New Abbey Road, Dumfries.
C No. 162	William Binnie, Harviestoun, Dollar.
C No. 164	James Cowan, Selkirk.
C No. 167	A. J. Motherwell, Glencairn Mill, Kilmarnock.

CLASS 30. MINORCA. Pullet.

1st No. 170	William Binnie, Harviestoun, Dollar.
2nd No. 171	Walter Bradley, Homelea Poultry Farm, Errol.
H No. 172	A. J. Motherwell, Glencairn Mill, Kilmarnock.

CLASS 31. LEGHORN—White. Cock.

1st No. 181	James Weir, Brickhouse, New Abbey Road, Dumfries.
2nd No. 175	Walter Bradley, Homelea Poultry Farm, Errol.
3rd No. 178	Moir Robertson, Cairneyhill, Dunfermline.
H No. 180	James Weir, Brickhouse, New Abbey Road, Dumfries.
C No. 179	James Weir, Brickhouse, New Abbey Road, Dumfries.

CLASS 32. LEGHORN—White. Hen.

1st No. 185	Walter Bradley, Homelea Poultry Farm, Errol.
2nd No. 190	James Weir, Brickhouse, New Abbey Road, Dumfries.
3rd No. 182	James D. Alexander, 59 Ann Street, Greenock.
H No. 187	Moir Robertson, Cairneyhill, Dunfermline.
C No. 188	Moir Robertson, Cairneyhill, Dunfermline.

CLASS 33. LEGHORN—White. Cockerel.

1st No. 191	Walter Bradley, Homelea Poultry Farm, Errol.
2nd No. 194	James Weir, Brickhouse, New Abbey Road, Dumfries.
H No. 193	William Tod, Cemetery Cottage, Kilbirnie.
C No. 192	R. & D. Polson, Seafeld Road, Kirkcaldy.

CLASS 34. LEGHORN—White. Pullet.

1st No. 195	Walter Bradley, Homelea Poultry Farm, Errol.
2nd No. 198	James Weir, Brickhouse, New Abbey Road, Dumfries.
H No. 196	James Robertson, Craichmore, Stranraer.
C No. 197	William Tod, Cemetery Cottage, Kilbirnie.

CLASS 35. LEGHORN—Any other Variety. Cock.

1st No. 199	R. Anthony, Euxton, Chorley, Lancashire (Brown).
2nd No. 200	Walter Bradley, Homelea Poultry Farm, Errol (Black).
H No. 201	Robert Durward, Dunecht, Aberdeenshire (Brown).
C No. 203	Hugh Lammie, Poultry Farm, Darvel, Ayrshire (Black).

CLASS 36. LEGHORN—Any other Variety. Hen.

1st No. 204	R. Anthony, Euxton, Chorley, Lancashire (Brown).
2nd No. 209	Hugh Lammie, Poultry Farm, Darvel, Ayrshire (Black).
3rd No. 207	Robert Durward, Dunecht, Aberdeenshire (Brown).
H No. 206	Miss Grace Burnett, Glenwood, Cults, Aberdeen (Brown).
C No. 210	R. S. Marsden, Kempstone, Clitheroe, Lancashire (Brown).

CLASS 37. LEGHORN—Any other Variety. Cockerel.

1st No. 211	Walter Bradley, Homelea Poultry Farm, Errol (Black).
2nd No. 212	Robert Henderson, High Street, Strathmiglo (Brown).
H No. 213	Robert Henderson, High Street, Strathmiglo (Brown).

CLASS 38. LEGHORN.—Any other Variety. Pullet.

- 1st No. 215 Walter Bradley, Homelea Poultry Farm, Errol (Brown).
 2nd No. 214 R. Anthony, Euxton, Chorley, Lancashire (Brown).

CLASS 39. LANGSHAN. Cock.

- 1st No. 218 R. Anthony, Euxton, Chorley, Lancashire.
 2nd No. 219 Walter Bradley, Homelea Poultry Farm, Errol.
 H No. 221 R. S. Marsden, Kempstone, Clitheroe, Lancashire.
 C No. 220 George Campbell, Daligen, Helensburgh.

CLASS 40. LANGSHAN. Hen.

- 1st No. 222 R. Anthony, Euxton, Chorley, Lancashire.
 2nd No. 224 R. S. Marsden, Kempstone, Clitheroe, Lancashire.
 H No. 223 R. Anthony, Euxton, Chorley, Lancashire.
 C No. 225 Andrew Stillie, Ettrick Road, Selkirk.

CLASS 41. LANGSHAN. Cockerel.

- 1st No. 226 R. Anthony, Euxton, Chorley, Lancashire.

CLASS 42. LANGSHAN. Pullet.

- 1st No. 227 R. Anthony, Euxton, Chorley, Lancashire.

CLASS 43. ORPINGTON—Black. Cock.

- 1st No. 233 William Morgan, Balcurvie, Windygates.
 2nd No. 232 William Martin, Chance Inn, Cupar-Fife.
 3rd No. 235 David Reid, Firthview, Portgordon.
 V No. 229 J. Brennand, Baldersby Park, Baldersby.
 H No. 231 R. S. Marsden, Kempstone, Clitheroe, Lancashire.
 C No. 230 John Fulton, Poultry Yards, Collessie, Fife.

CLASS 44. ORPINGTON—Black. Hen.

- 1st No. 240 William Morgan, Balcurvie, Windygates.
 2nd No. 242 Moir Robertson, Cairneyhill, Dunfermline.
 3rd No. 241 Charles, Pattison, Main Street, Lennoxtown.
 V No. 243 Whitefield Brothers, Eastertoun, Armadale.
 H No. 238 Tom H. Furness, Carlton House, Chesterfield.
 C No. 239 Thomas Lockwood, Pateley Bridge, Yorkshire.

CLASS 45. ORPINGTON—Black. Cockerel.

- 1st No. 246 David Reid, Firthview, Portgordon.
 2nd No. 245 William Charles, Gammons, Rothienorman.
 H No. 244 Walter Bradley, Homelea Poultry Farm, Errol.

CLASS 46. ORPINGTON—Black. Pullet.

- 1st No. 251 Evelyn Ross, Larbert, Stirlingshire.
 2nd No. 249 John Fulton, Poultry Yards, Collessie, Fife.
 V No. 248 William Charles, Gammons, Rothienorman.
 H No. 250 David Reid, Firthview, Portgordon.

CLASS 47. ORPINGTON—Buff. Cock.

- 1st No. 252 R. Anthony, Euxton, Chorley, Lancashire.
 2nd No. 253 Lady Cowdray, Dunecht House, Dunecht.
 3rd No. 258 David Reid, Firthview, Portgordon.
 V No. 257 David Reid, Firthview, Portgordon.
 H No. 254 Lady Cowdray, Dunecht House, Dunecht.
 C No. 255 Tom H. Furness, Carlton House, Chesterfield.
 C No. 256 William Morgan, Balcurvie, Windygates.

CLASS 48. ORPINGTON—Buff. Hen.

- 1st No. 262 Robert M'Millan, 126 King Street, Kilmarnock.
 2nd No. 259 R. Anthony, Euxton, Chorley, Lancashire.
 3rd No. 260 Walter Bradley, Homelea Poultry Farm, Errol.
 V No. 264 David Reid, Firthview, Portgordon.
 H No. 263 William Martin, Chance Inn, Cupar-Fife.
 C No. 261 J. Marsden Chandler, Fairfield, Brampton, Chesterfield.

CLASS 49. ORPINGTON—Buff. Cockerel.

- 1st No. 269 Lord Leith of Fyvie, Home Farm, Fyvie.
 2nd No. 268 Lord Leith of Fyvie, Home Farm, Fyvie.
 3rd No. 271 David Reid, Firthview, Portgordon.
 V No. 270 David Reid, Firthview, Portgordon.
 H No. 267 Tom H. Furness, Carlton House, Chesterfield.

CLASS 50. ORPINGTON—Buff. Pullet.

- 1st No. 275 Lord Leith of Fyvie, Home Farm, Fyvie.
 2nd No. 274 Tom H. Furness, Carlton House, Chesterfield.
 3rd No. 276 Lord Leith of Fyvie, Home Farm, Fyvie.
 V No. 278 David Reid, Firthview, Portgordon.
 H No. 277 David Reid, Firthview, Portgordon.

CLASS 51. ORPINGTON—Any other Variety. Cock.

- 1st No. 281 T. R. Leitch, Cameron Bridge, Windygates (White).
 2nd No. 280 Tom H. Furness, Carlton House, Chesterfield (Blue).
 V No. 279 D. J. W. Dundas, Craigarn Hall, Bridge of Allan (White).
 H No. 282 David Reid, Firthview, Portgordon (White).

CLASS 52. ORPINGTON—Any other Variety. Hen.

- 1st No. 285 Tom H. Furness, Carlton House, Chesterfield (White).
 2nd No. 283 J. Brennand, Baldersby Park, Baldersby (White).
 V No. 284 John Fulton, Poultry Yards, Collessie, Fife (White).

CLASS 53. ORPINGTON—Any other Variety. Cockerel.

- 1st No. 286 Walter Bradley, Homelea Poultry Farm, Errol (White).
 2nd No. 287 J. Brennand, Baldersby Park, Baldersby (White).
 V No. 288 David Reid, Firthview, Portgordon (White).

CLASS 54. ORPINGTON—Any other Variety. Pullet.

- 1st No. 290 J. Brennand, Baldersby Park, Baldersby (White).
 2nd No. 293 David Reid, Firthview, Portgordon (White).
 3rd No. 292 Tom H. Furness, Carlton House, Chesterfield (White).
 V No. 289 Walter Bradley, Homelea Poultry Farm, Errol (White).
 H No. 291 John Fulton, Poultry Yards, Collessie, Fife (White).
 C No. 294 David Reid, Firthview, Portgordon (White).
 C No. 295 James Robertson, Craichmore, Stranraer (White).

CLASS 55. WYANDOTTE—Gold or Silver. Cock.

- 1st No. 300 Tom H. Furness, Carlton House, Chesterfield (Silver).
 2nd No. 304 Charles E. Pickles, Kayfield House, Earby (Silver).
 3rd No. 296 R. Anthony, Euxton, Chorley, Lancashire (Gold).
 V No. 298 Robert Arrol, 3 St James Terrace, Paisley (Silver).
 H No. 301 Thomas Lockwood, Pateley Bridge, Yorkshire (Gold).
 C No. 297 Fred Argo, 86 High Street, Inverurie (Silver Laced).
 C No. 302 Robert Mitchell, Kennoway Road, Windygates (Gold).
 C No. 303 William Morgan, Balcurvie, Windygates (Gold).
 C No. 305 A. Pollock, Poultry Yards, Muirkirk (Gold).

CLASS 56. WYANDOTTE—Gold or Silver. Hen.

- 1st No. 309 Tom H. Furness, Carlton House, Chesterfield (Silver).
- 2nd No. 306 Fred Argo, 86 High Street, Inverurie (Silver Laced).
- 3rd No. 314 Charles E. Pickles, Kayfield House, Farby (Silver).
- H No. 310 Thomas Lockwood, Pateley Bridge, Yorkshire (Silver).
- C No. 311 Robert Mitchell, Kennoway Road, Windygates (Silver).
- C No. 313 William Morgan, Balcurvie, Windygates (Silver).
- C No. 308 John Chrystal, Inverboyndie, Banff (Gold).
- C No. 312 William Morgan, Balcurvie, Windygates (Gold).

CLASS 57. WYANDOTTE—Gold or Silver. Cockerel.

- 1st No. 315 Robert Mitchell, Kennoway Road, Windygates (Gold).
- 2nd No. 316 William Morgan, Balcurvie, Windygates (Silver).
- V No. 317 A. Pollock, Poultry Yards, Muirkirk (Silver).
- H No. 318 John S. Simpson, jun., 17 West Church Street, Buckie (Gold).

CLASS 58. WYANDOTTE—Gold or Silver. Pullet.

- 1st No. 322 J. M. Philipson, Wyandotte Farm, Haydon Bridge (Silver Laced).
- 2nd No. 321 William Morgan, Balcurvie, Windygates (Gold).
- C No. 320 Thomas Lockwood, Pateley Bridge, Yorkshire (Silver Laced).

CLASS 59. WYANDOTTE—Black or White. Cock.

- 1st No. 326 Tom H. Furness, Carlton House, Chesterfield (White).
- 2nd No. 327 J. Ernest Kerr of Harviestoun Castle, Dollar (White).
- 3rd No. 323 R. Anthony, Euxton, Chorley, Lancashire (White).
- V No. 324 Miss Coats, Corsebar, Paisley (White).
- H No. 331 Moir Robertson, Cairneyhill, Dunfermline (White).
- C No. 325 D. J. W. Dundas, Craigarn Hall, Bridge of Allan (White).
- C No. 330 A. Pollock, Poultry Yards, Muirkirk (Black).
- C No. 329 James Love, Kibble, Paisley (White).
- C No. 332 Mrs Margaret Scott, The Lindens, Langside (White)

CLASS 60. WYANDOTTE—Black or White. Hen

- 1st No. 336 Tom H. Furness, Carlton House, Chesterfield (White).
- 2nd No. 334 Walter Bradley, Homelea Poultry Farm, Errol (White).
- 3rd No. 337 J. Ernest Kerr of Harviestoun Castle, Dollar (White).
- V No. 333 R. Anthony, Euxton, Chorley, Lancashire (White).
- H No. 338 J. Ernest Kerr of Harviestoun Castle, Dollar (White).
- C No. 341 Mrs Margaret Scott, The Lindens, Langside (White).
- C No. 335 R. Cape & Co., Model Poultry Farm, Prestwick (Black).

CLASS 61. WYANDOTTE—Black or White. Cockerel.

- 1st No. 343 Tom H. Furness, Carlton House, Chesterfield (White).
- 2nd No. 342 Walter Bradley, Homelea Poultry Farm, Errol (White).
- 3rd No. 344 J. Ernest Kerr of Harviestoun Castle, Dollar (Black).
- V No. 343 A. Pollock, Poultry Yards, Muirkirk (Black).
- H No. 350 James Weir, Brickhouse, New Abbey Road, Dumfries (White).
- C No. 351 John Wharton, Honeycott Farm, Hawes, Yorkshire (White).
- C No. 346 A. H. S. Macgregor, Barry Poultry Farm, Carnoustie (White).
- C No. 349 Moir Robertson, Cairneyhill, Dunfermline (White).

CLASS 62. WYANDOTTE—Black or White. Pullet.

- 1st No. 357 Lord Leith of Fyvie, Home Farm, Fyvie (White).
- 2nd No. 355 Tom H. Furness, Carlton House, Chesterfield (White).
- 3rd No. 353 Walter Bradley, Homelea Poultry Farm, Errol (White).
- V No. 356 J. Ernest Kerr of Harviestoun Castle, Dollar (Black).
- H No. 359 A. H. S. Macgregor, Barry Poultry Farm, Carnoustie (White).
- C No. 362 John Wharton, Honeycott Farm, Hawes, Yorkshire (White).
- C No. 360 William Taylor M'Kie, Freeland, Bishopton (White).
- C No. 361 Moir Robertson, Cairneyhill, Dunfermline (White).

CLASS 63. WYANDOTTE—Any other Variety. Cock.

- 1st No. 365 John Wharton, Honeycott Farm, Hawes, Yorkshire (Partridge).
 2nd No. 364 William Morgan, Balcurvie, Windygates (Partridge).
 V No. 363 William Younge Jeeves, Ashfield, Moffat (Columbian).

CLASS 64. WYANDOTTE—Any other Variety. Hen.

- 1st No. 366 Tom H. Furness, Carlton House, Chesterfield (Blue).
 2nd No. 370 John Wharton, Honeycott Farm, Hawes, Yorkshire (Partridge).
 3rd No. 368 R. Niven & Son, Abbey Poultry Yards, Newmills (Partridge).
 V No. 367 William Younge Jeeves, Ashfield, Moffat (Columbian).
 H No. 369 David Reid, Firthview, Portgordon (Partridge).

CLASS 65. WYANDOTTE—Any other Variety. Cockerel.

- 1st No. 371 William Younge Jeeves, Ashfield, Moffat (Columbian).
 2nd No. 372 John Wharton, Honeycott Farm, Hawes, Yorkshire (Partridge).

CLASS 66. WYANDOTTE—Any other Variety. Pullet.

- 1st No. 374 John Wharton, Honeycott Farm, Hawes, Yorkshire (Partridge).
 2nd No. 375 John Wharton, Honeycott Farm, Hawes, Yorkshire (Partridge).
 V No. 373 William Younge Jeeves, Ashfield, Moffat (Columbian).

CLASS 67. RHODE ISLAND RED. Cock.

- 1st No. 376 Walter Bradley, Homelea Poultry Farm, Errol.
 2nd No. 381 James Reid, Kilnheugh, Auchtermuchty.
 3rd No. 379 William Morgan, Balcurvie, Windygates.
 H No. 380 Mrs Parker, Clovelly, Kilmalcolm.
 C No. 384 Andrew Thomson, Wemyss Farm, Wemyss Bay.

CLASS 68. RHODE ISLAND RED. Hen.

- 1st No. 388 William Morgan, Balcurvie, Windygates.
 2nd No. 390 James Reid, Kilnheugh, Auchtermuchty.
 3rd No. 391 Robert Vair, Rhodelands, Dunblane.
 C No. 389 Mrs Parker, Clovelly, Kilmalcolm.

CLASS 69. RHODE ISLAND RED. Cockerel.

- 1st No. 395 William H. Steven, Woodend, Helensburgh.
 2nd No. 392 Walter Bradley, Homelea Poultry Farm, Errol.

CLASS 70. RHODE ISLAND RED. Pullet.

- 1st No. 401 Alexander Stevenson, Commercial Road, Ladybank, Fife.
 2nd No. 399 John Smith, Netherholm House, Dumfries.
 3rd No. 402 James Stirling, Mossgrove, Bridge of Allan.
 H No. 398 David Reid, Davella, Freuchie, Fife.
 C No. 403 James Stirling, Mossgrove, Bridge of Allan.

CLASS 71. INDIAN GAME. Cock.

- 1st No. 404 J. Brennand, Baldersby Park, Baldersby.
 2nd No. 406 J. Ernest Kerr of Harviestoun Castle, Dollar.
 V No. 407 R. S. Marsden, Kempstone, Clitheroe, Lancashire.

CLASS 72. INDIAN GAME. Hen.

- 1st No. 409 J. Ernest Kerr of Harviestoun Castle, Dollar.
 2nd No. 412 R. S. Marsden, Kempstone, Clitheroe, Lancashire.
 3rd No. 408 J. T. Cathcart, Pitcairrie, Newburgh.
 V No. 410 J. Ernest Kerr of Harviestoun Castle, Dollar.
 H No. 418 John Pettigrew, Mossview, Dalmellington.
 C No. 411 A. Livingstone, 16 Drumfrochar Road, Greenock.

CLASS 73. GAME—Old English. Cock.

- 1st No. 414 Walter Bradley, Homelea Poultry Farm, Errol.
 2nd No. 418 Ralph D. Moore, Denehollow, Bearsden.
 3rd No. 416 Andrew Hain, Leonard Road, Freuchie, Fife (Black Red).
 V No. 419 Andrew Stillie, Ettrick Road, Selkirk (Black Red).
 H No. 417 R. S. Marsden, Kempstone, Clitheroe, Lancashire.
 C No. 415 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft.

CLASS 74. GAME—Old English. Hen.

- 1st No. 423 R. S. Marsden, Kempstone, Clitheroe, Lancashire.
 2nd No. 420 D. & F. Crichton, Foodieash, Cupar-Fife.
 V No. 424 Ralph D. Moore, Denehollow, Bearsden.
 H No. 422 Alexander Jeffrey, Preston, Ford, Mid-Lothian.

CLASS 75. GAME—Modern. Cock.

- 1st No. 425 J. Brennand, Baldersby Park, Baldersby.
 2nd No. 426 William Donaldson, jun., Middle Lodge, Wemyss Bay.

CLASS 76. GAME—Modern. Hen.

- 1st No. 427 J. Brennand, Baldersby Park, Baldersby.
 2nd No. 430 Tom H. Furness, Carlton House, Chesterfield.
 V No. 428 William Donaldson, jun., Middle Lodge, Wemyss Bay.
 H No. 429 William Donaldson, jun., Middle Lodge, Wemyss Bay.

CLASS 77. GAME—Indian and Old English. Cockerel.

- 1st No. 431 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Old English).

CLASS 78. GAME—Indian and Old English. Pullet.

- 1st No. 432 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Old English).

CLASS 79. BANTAM—Game, any Variety, including Old English and Indian Game. Cock.

- 1st No. 433 J. Brennand, Baldersby Park, Baldersby (Modern).
 2nd No. 435 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Spangle).
 H No. 434 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft (Old English).
 C No. 436 Ralph D. Moore, Denehollow, Bearsden (Old English).

CLASS 80. BANTAM—Game, any Variety, including Old English and Indian Game. Hen.

- 1st No. 437 J. Brennand, Baldersby Park, Baldersby (Modern).
 2nd No. 440 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Spangle).
 H No. 439 George S. M'Glasson, Newbie Villa, Annan (Old English).
 C No. 438 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silecroft (Old English).

CLASS 81. BANTAM—Any other Variety Bantam. Cock.

- 1st No. 443 John Anderson, Hill Street, Kilmarnock (Rosecomb).
 2nd No. 445 Walter Bradley, Homelea Poultry Farm, Errol (Pekin).
 3rd No. 450 J. Ernest Kerr of Harviestoun Castle, Dollar (Scotch Grey).
 V No. 442 John Anderson, Hill Street, Kilmarnock (Rosecomb).
 H No. 444 R. Anthony, Euxton, Chorley, Lancashire (Seabright).
 C No. 448 George Hamilton, Holehouse Farm, Neilston (Scotch Grey).
 C No. 446 Miss Coats, Corsebar, Paisley (Seabright).

CLASS 82. BANTAM—Any other Variety Bantam. Hen.

- 1st No. 453 John Anderson, Hill Street, Kilmarnock (Rosecomb).
 2nd No. 459 J. Ernest Kerr of Harviestoun Castle, Dollar (Scotch Grey).
 3rd No. 455 Walter Bradley, Holmlea Poultry Farm, Errol (Pekin).
 V No. 461 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Seabright).
 H No. 452 John Anderson, Hill Street, Kilmarnock (Rosecomb).
 C No. 457 George Hamilton, Holehouse Farm, Neilston (Scotch Grey).
 C No. 458 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Seabright).
 C No. 454 R. Anthony, Euxton, Chorley, Lancashire (Rosecomb).
 C No. 463 Charles E. Pickles, Kayfield House, Earby (Black).

CLASS 83. Any other recognised Breed of Poultry. Cock.

- 1st No. 466 Alexander Ollar, Kilkerran Cottage, Campbeltown (Spanish).
 2nd No. 467 Mrs Parker, Clovelly, Kilmalcolm (Silkie).
 C No. 465 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Andalusian).

CLASS 84. Any other recognised Breed of Poultry. Hen.

- 1st No. 472 Alexander Ollar, Kilkerran Cottage, Campbeltown (Spanish).
 2nd No. 473 Charles E. Pickles, Kayfield House, Earby (Ancona).
 3rd No. 471 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Andalusian).
 V No. 470 John Craig, Fauldside Cottage, Dregghorn, Ayrshire (Scots Dumpie Cuckoo).
 H No. 469 Robert Arrol, 3 St James Terrace, Paisley (Andalusian).
 C No. 468 F. Anderson, Janefield Farm, Dunfermline (Houdan).

CLASS 85. Any other recognised Breed of Poultry. Cockerel.

- 1st No. 479 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Andalusian).
 2nd No. 474 John Anderson, Hill Street, Kilmarnock (Rosecomb Bantam).
 3rd No. 478 J. Ernest Kerr of Harviestoun Castle, Dollar (Scotch Grey).
 V No. 476 J. Brennand, Baldersby Park, Baldersby (Bantam).
 C No. 477 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Pekin).

CLASS 86. Any other recognised Breed of Poultry. Pullet.

- 1st No. 482 J. Brennand, Baldersby Park, Baldersby (Modern Game).
 2nd No. 483 R. S. Marsden, Kempstone, Clitheroe, Lancashire (Andalusian).
 H No. 481 John Anderson, Hill Street, Kilmarnock (Rosecomb Bantam).

CLASS 87. TABLE FOWLS—Any Breed or Cross, to be judged solely as Table Fowls, and without regard to fancy points. Pair of Cockerels.

- 1st No. 484 Frindsbury Poultry Farm, Strood, Kent (Coucoude Malines).
 2nd No. 485 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Indian Game and Buff Orpington).
 H No. 486 T. & J. Lumsden, High Street, Strathmiglo (Dorking and Indian).
 C No. 487 John Miller Mechie, Auchtermuchty (Dorkings).

CLASS 88. TABLE FOWLS—Any Breed or Cross, to be judged solely as Table Fowls, and without regard to fancy points. Pair of Pullets.

- 1st No. 489 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Indian Game and Buff Orpington).
 2nd No. 490 T. & J. Lumsden, High Street, Strathmiglo (Dorking and Indian).
 H No. 492 John Mechie, Auchtermuchty (Indian and Dorking).
 C No. 488 J. C. Cuninghame, of Craigends, Johnstone (Indian Game and Silver Wyandotte).

CLASS 89. DUCKS—Aylesbury. Drake.

- 1st No. 496 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 497 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 3rd No. 493 William Charles, Gammons, Rothienorman.
 V No. 494 Andrew B. Dalgety, Lochend, Forgandenny.
 H No. 498 James Maxwell, Sparnel Bank, Galston.
 C No. 495 Thomas Haxton, Westmuir, Blackford, Perthshire.

CLASS 90. DUCKS—Aylesbury. Duck.

- 1st No. 503 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 502 James Huntly & Son, Hirsell Poultry Farm, Coldstream.

CLASS 91. DUCKS—Aylesbury. Drake (Young).

- 1st No. 504 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 505 James Huntly & Son, Hirsell Poultry Farm, Coldstream.

CLASS 92. DUCKS—Aylesbury. Duck (Young).

- 1st No. 506 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 2nd No. 507 James Huntly & Son, Hirsell Poultry Farm, Coldstream.

CLASS 93. DUCKS—Rouen. Drake.

- 1st No. 508 J. Brennand, Baldersby Park, Baldersby.
 2nd No. 510 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 V No. 509 James Huntly & Son, Hirsell Poultry Farm, Coldstream.

CLASS 94. DUCKS—Rouen. Duck.

- 1st No. 511 J. Brennand, Baldersby Park, Baldersby.
 2nd No. 513 James Huntly & Son, Hirsell Poultry Farm, Coldstream.
 V No. 512 R. Cape & Co., Model Poultry Farm, Prestwick.
 H No. 514 James Huntly & Son, Hirsell Poultry Farm, Coldstream.

CLASS 95. DUCKS—Any other Variety. Drake.

- 1st No. 516 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 2nd No. 515 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 H No. 517 John Smith, Netherholm House, Dumfries (Indian Runner).

CLASS 96. DUCKS—Any other Variety. Duck.

- 1st No. 518 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 2nd No. 519 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).

CLASS 97. DUCKS—Any Variety (Aylesbury excepted). Drake (Young).

- 1st No. 522 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 2nd No. 521 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 V No. 523 William C. Ritchie, jun., Lyne, Peebles (Indian Runner).
 H No. 520 J. Brennand, Baldersby Park, Baldersby (Buff Orpington).

CLASS 98. DUCKS—Any Variety (Aylesbury excepted). Duck (Young).

- 1st No. 526 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 2nd No. 525 James Huntly & Son, Hirsell Poultry Farm, Coldstream (Buff Orpington).
 V No. 527 William C. Ritchie, jun., Lyne, Peebles (Indian Runner).

CLASS 99. GEESE. Gander.

- 1st No. 528 Arthur H. Fox-Brockbank, The Croft, Kirksanton, Silcroft (Embsden).

CLASS 100. GEESE. Goose.

(No Entry.)

CLASS 101. TURKEYS. Cock.

- 1st No. 532 Miss Shanks, Broomhill, Denny (Bronze).
 2nd No. 531 Lord Leith of Fyvie, Home Farm, Fyvie (American Mammoth Bronze).
 V No. 530 Mrs R. Cliehrst, Bellsdyke, Falkirk (Mammoth Bronze).
 H No. 529 Robert Clark, Taybank, Errol (American Bronze).

CLASS 102. TURKEYS. Hen.

- 1st No. 536 Lord Leith of Fyvie, Home Farm, Fyvie (American Mammoth Bronze).
 2nd No. 533 Robert Clark, Taybank, Errol (American Bronze).
 V No. 535 Mrs R. Gilchrist, Bellsdyke, Falkirk (Mammoth Bronze).
 H No. 534 Miss Coats, Corsebar, Paisley (American Bronze).

DAIRY PRODUCE

Piece of Plate, value £5, for the best lot of Butter in Classes 1 and 2, contributed from the late Provost Muir MacKean's Fund.

No. 37 Miss Strang, Transy Farm, Dunfermline.

CLASS 1. POWDERED BUTTER, not less than 7 lb.—Premiums, £6 (contributed from the late Provost Muir MacKean's Fund), £4, £2, and £1.

- 1st No. 8 Mrs Peter Holms, Faulds, Gourrock.
 2nd No. 17 Miss Strang, Transy Farm, Dunfermline.
 3rd No. 7 Robert Gilmour, Stonebyres, Eaglesham.
 4th No. 5 Andrew Fleming, Thriepland, Eaglesham.
 V No. 10 Walter Little, Drumloch, Chapelton.
 H No. 12 Mrs Monteith, Clachanry, Baliron.
 C No. 14 William Rennie, Parkhead, Slamannan.

CLASS 2. FRESH BUTTER, Three 1 lb. Rolls.—Premiums, £6 (contributed from the late Provost Muir MacKean's Fund), £4, £2, and £1.

- 1st No. 37 Miss Strang, Transy Farm, Dunfermline.
 2nd No. 32 Mrs Monteith, Clachanry, Balfron.
 3rd No. 34 William Rennie, Parkhead, Slamannan.
 4th No. 26 Robert Gilmour, Stonebyres, Eaglesham.
 V No. 24 Andrew Fleming, Thriepland, Eaglesham.
 H No. 27 Mrs Peter Holms, Faulds, Gourrock.
 C No. 35 Miss Shanks, Broomhill, Denny.

CLASS 3. CHEDDAR CHEESE, 56 lb. and upwards.—Premiums, £12, £7, £4, £3, £2, and £1.

- 1st No. 63 David Thomson, Milton Dairy, Kirkcudbright.
 2nd No. 43 James Borland, Mossbog, Mauchline.
 3rd No. 45 Alexander Cross of Knockdon, Maybole.
 4th No. 46 James Cruickshanks, Castle Creavie, Kirkcudbright.
 5th No. 58 William G. Plunkett, Myremill Dairy, Maybole.
 6th No. 41 William F. C. Barron, Caigton Dairy, Castle-Douglas.
 V No. 65 John Weir, Midtown, New Abbey Road, Dumfries.
 H No. 66 Alexander Wyllie, Mossgiel, Mauchline.
 C No. 49 John Gibson, East Galdenoch, Stoneykirk, Stranraer.

CLASS 4. SWEET-MILK CHEESE, flat shape (from a dairy where all cheese is made flat shape), white in colour, made according to the Dunlop or other method.—Premiums, £5, £4, £3, and £2.

- 1st No. 69 George Gibson, North Auchenbrain, Galston.
 2nd No. 68 Hector Galbraith, Pollinilline, Southend, Campbelltown.
 3rd No. 70 James A. Hunter, Machribeg, Campbelltown.
 4th No. 71 David Stratton, Dalreoch Farm, Colmonell, Ayrshire.

CLASS 5. CHEESE, 14 lb. and under.—Premiums, £4, £3, £2, and £1.

- 1st No. 72 David Airdrie, Auchlane, Castle-Douglas.
 2nd No. 86 John G. M'Kechan, Craigoch, Kilkerran, Maybole.
 3rd No. 95 Alexander Wyllie, Mossgiel, Mauchline.
 4th No. 81 John Gibson, East Galdenoch, Stoneykirk, Stranraer.
 V No. 84 William Hunter, Garthland Mains, Stranraer.
 H No. 75 John Carroll, Auchenblane, Maybole.
 C No. 88 Adam W. Montomerie, Lessnessock, Ochiltree.

HORSE SHOING

Open to Shoeing-Smiths from any part of the United Kingdom.

CLASS 1. FARM or WORK HORSES.—Prizes, £6 (contributed from the late Provost Muir MacKean's Fund), £3, £2, and £1.

- 1st Duncan Cameron, Water Street, Dalbeattie.
- 2nd William Wyllie, Robertson Terrace, Bank Street, Irvine.
- 3rd William Duncanson, 34 Gordon Street, Paisley.
- 4th Edward Martin, Closeburn, Dumfriesshire.

CLASS 2. HARNESS HORSES.—Prizes, £6 (contributed from the late Provost Muir MacKean's Fund), £3, £2, and £1.

- 1st George G. M'Darmid, 17 Cross Arthurlie Street, Barrhead.
- 2nd William Wyllie, Robertson Terrace, Bank Street, Irvine.
- 3rd George Marshall, Gateside, Beith.
- 4th John Braid, Gairney Bridge, Kinross.

BEE-KEEPING APPLIANCES

Competition conducted by the West of Scotland Agricultural College.

Silver Medals have been awarded to the following :—

1. **BEST DOUBLE-WALLED HIVE**, complete with Lifts, Sections, and Shallow Frames.
Medal—Steele & Brodie, Wormit, Fife.
2. **BEST SINGLE-WALLED COTTAGER'S HIVE**, with Lift and Crate of Sections or Shallow Frame.
Medal—Steele & Brodie, Wormit, Fife.
3. **BEST HIVE FOR PLACING OUT ON HEATHER**, with Ventilating Porch, &c.
Medal—Austin & M'Aslan, 89 Mitchell Street, Glasgow.
4. **BEST OBSERVATORY HIVE STOCKED WITH BEES**, adapted for School and College Teaching.
Medal—Steele & Brodie, Wormit, Fife.
V.H.C.—John W. Moir, 30 Shandon Place, Edinburgh.
5. **BEST COLLECTION OF UP-TO-DATE BEE APPLIANCES**, including Hives, Frames, and Sections.
Medal—Steele & Brodie, Wormit, Fife.
6. **BEST RECENT INVENTION IN HIVES OR APPLIANCES** introduced since 1912.
Medal—Steele & Brodie, Wormit, Fife.
V.H.C.—John W. Moir, 30 Shandon Place, Edinburgh.
7. **MOST SUITABLE CHEAP COTTAGER OR CROFTER'S HIVE**, Straw or Wood, of price not exceeding 5s.
Medal—Austin & M'Aslan, 89 Mitchell Street, Glasgow.

JUDGES

Shorthorn.—John Barnes, Aikbank, Wigton, Carlisle; James M'William, Garbity, Orton Station.

Aberdeen-Angus.—Lewis Beaton, Cullen House, Home Farm, Cullen; D. Robertson, Mains of Fordie, Murthly.

Galloway.—Robert Shennan, Balig, Kirkcudbright; John Thomlinson, Cleugh Head, Low Row, Carlisle.

Highland.—Archibald Turner, Kilchamaig, Whitehouse, Argyllshire.

Ayrshire.—John M'Alister, Ardyne, Toward; Thomas Scott, Netherhall, Sandilands, Lanark.

Jersey.—Captain J. W. Smith-Neill, Doonbrae, Alloway, Ayr.

Shetland Cattle.—Robert Brydon, The Dene, Seaham Harbour.

British Holstein Cattle.—A. W. Sturgeon, Sackville House, East Grinstead, Surrey.

Fat Cattle and Fat Sheep.—Bailie Brechin, D. L., Glasgow.

Draught Stallions, Entire Colts, and Geldings.—W. Aitkenhead, Meadowbank, Polmont; Richard Dunn, Udston, Hamilton; John Cocker, Hill of Petty, Fyvie.

Draught Mares and Fillies.—James M'Laren, Alton, Stirling; William Clark, Wester Bogie, Kirkcaldy; James Fleming, Frick Mains, Frickheim.

Hunters.—T. Wickham-Boynton, Estate Office, Burton Agnes, Driffield, Yorks; Captain R. M. Stewart Richardson, 11th Hussars, East Cavalry Barracks, Aldershot.

Hackneys, Ponies, and Harness Horses.—Richard Ford, Garton, Driffield, Yorks; Edward Hollingworth, Moordale, Dobcross, Yorks.

Highland Ponies.—J. R. Campbell, Shinness, Laing.

Shetland Ponies.—Robert Brydon, The Dene, Seaham Harbour; Robert Thomson, "Cora Linn," Peckham, London, S. E.

Blackface.—Thomas Carswell, Chermorrie, Barrhill, Ayrshire; John J. Macmillan, Glencrosh, Moniaive; W. A. M'Turk, Barlae, Dalry, Galloway.

Cheviot.—Walter Mundell, Dalchork, Laing; James R. C. Smith, Mowhaugh, Yetholm.

Border Leicester.—John Mark, Sunnyside, Prestonkirk; Tom Templeton, Sandyknowe, Kelso.

Half-Bred.—Simon Linton, jun., Posso, Peebles.

Shropshire.—Arthur S. Gibson, Coldham House, Elm, Wisbech.

Oxford Down.—J. C. Toppin, jun., Musgrave Hall, Skelton, Penrith.

Suffolk.—Herbert E. Smith, The Grange, Walton, Ipswich.

Swine.—Charles E. Duckering, The Laurels, Kirkton-in-Lindsey, Lincs.

Poultry.—John Meikle, Camreggan, Girvan (Classes 1 to 16, 23 to 26, 31 to 42, 67 to 70, and 79 to 88 inclusive); W. H. Silvester, Hawthorns, Hillsbro Park, Sheffield (Classes 17 to 22, 27 to 30, 43 to 66, 71 to 78, and 89 to 102 inclusive).

Dairy Produce.—Hugh Osborne, 45 Candleriggs Street, Glasgow.

Wool.—Alexander Willison, Easterhills, Dalry.

Horse-shoeing.—J. R. U. Dewar, 18 Drummond Place, Edinburgh; Robert Muir, Sandyford, Monkton, Ayrshire.

Army Remounts.—Major J. Carnaghan, Territorial Riding School, Yorkhill, Glasgow.

Draught Geldings in Harness, Van Horses, and Milk Turns-Out.—James M'Laren, Alton, Stirling.

II.—VETERINARY DEPARTMENT.

CLASS EXAMINATIONS, 1913.

Silver Medals were awarded to the following:—

ROYAL (DICK) VETERINARY COLLEGE.

Chemistry	J. R. Rider, Beamish, Co. Durham.
Biology	George Howie, Alford, Aberdeen.
Junior Anatomy	J. R. Rider, Beamish, Co. Durham.
Senior Anatomy	James Edgar, Whithorn, Wigtownshire.
Physiology	James M'Allan, M. A., Aberdeen.
Stable Management	James Edgar, Whithorn, Wigtownshire.
Materia Medica	Thomas Dalling, Liberton, Mid-Lothian.
Pathology	Thomas Dalling, Liberton, Mid-Lothian.
Hygiene	Thomas Dalling, Liberton, Mid-Lothian.
Surgery	R. S. Little, Carlisle.
Medicine	R. S. Little, Carlisle.

GLASGOW VETERINARY COLLEGE.

Chemistry	John Keane, 11 Falkland Mansions, Glasgow.
Biology	Donald Gillmor, Dromahair, Ireland.
Junior Anatomy	Donald Gillmor, Dromahair, Ireland.
Senior Anatomy	Archibald Campbell, Kirk Road, Wishaw.
Physiology	William Macgregor, 3 Castlehill Road, Ayr.
Stable Management	William Macgregor, 3 Castlehill Road, Ayr.
Materia Medica and Therapeutics	Eric E. MacLachlan, 59 Barrington Drive, Glasgow.
Pathology and Bacteriology	Eric E. MacLachlan, 59 Barrington Drive, Glasgow.
Hygiene and Dietetics	Eric E. MacLachlan, 59 Barrington Drive, Glasgow.
Veterinary Surgery	Tom T. Taylor, 8 Raise Street, Saltcoats.
Veterinary Medicine	Robert M. Lawson, 8 Cecil Place, Ibrox, Glasgow.

22 Large Silver Medals, £14, 0s. 6d.

III.—DISTRICT COMPETITIONS, 1913.

13 Districts—Grants of £12 each (Section I.) (less £3 not awarded)	£153	0	0
10 " Grants of £15 each (Section II.) (less £15 not awarded)	135	0	0
10 " Special Grants, £111; Medals, £3, 6s.	114	6	0
30 " Medals for Shows (60 Large, 3 Medium)	42	10	6
10 " Medals for Cottages and Gardens (14 Minor)	3	11	2
216 " Medals for Ploughing, 1912-13	54	18	0
<u>289</u>	<u>£503</u>	<u>5</u>	<u>8</u>

ABSTRACT OF PREMIUMS.

Paisley Show	£3357	19	0
District Competitions	503	5	8
Veterinary Colleges	14	0	6
	<u>£4375</u>	<u>5</u>	<u>2</u>

CUPAR SHOW, 1912.

ALTERATIONS IN PRIZE LIST.

On account of animals failing to comply with the Regulations as to calving, foaling, and farrowing, the following changes have taken place in the list of animals for which prizes were paid :—

CATTLE

CLASS 23. HEIFER, calved in 1909.—Premiums, £10, £5, £3, and £2.

- | | | |
|-----|---------|---|
| 1st | No. 199 | The Trustees of the late Countess-Dowager of Seafield, Castle Grant, Grantown-on-Spey, "Lady Elinor of Castle Grant." |
| 2nd | No. 196 | W. Dalziel Mackenzie of Farr, Farr House, Daviot, Inverness, "Lady Margaret of Farr" (7638). |
| 3rd | No. 193 | The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Te Riabhach XIII. of Atholl." |
| | No. 200 | The Trustees of the late Countess-Dowager of Seafield, Castle Grant, Grantown-on-Spey, "Proisag of Castle Grant." |
| 4th | No. 195 | Marquis of Bute, Mount Stuart, Rothesay, "Lady Jean of Bute." |
| V | No. 203 | D. A. Stewart of Lochdhu, Nairn, "Laochag." |
| H | No. 194 | The Duke of Atholl, K.T., Blair Castle, Blair-Atholl, "Mairi Ruadh IV. of Atholl." |
| C | No. 198 | Lord Middleton, Applecross, Ross-shire, "Morag Ruadh XVI." (8069). |

The animals failing to qualify are marked thus ().*

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY

OF SCOTLAND

As at 29th NOVEMBER 1913.

I. INVESTED IN CONSOLS, HERITABLE BONDS, DEBENTURE AND PREFERENCE RAILWAY STOCKS, BANK STOCKS, &c.	£106,178 11 7
II. ESTIMATED VALUE of Buildings, No. 3 George IV. Bridge	£3,100 0 0
III. ESTIMATED VALUE of Furniture, Paintings, Books, &c.	1,000 0 0
	4,100 0 0
IV. ARREARS OF SUBSCRIPTIONS considered recoverable	141 19 0
V. BALANCES at 29th November 1913—DUE BY ROYAL BANK OF SCOTLAND	1,725 19 5
AMOUNT OF GENERAL FUNDS	<u>£112,146 10 0</u>
VI. SPECIAL FUNDS—	
TWEEDDALE MEDAL FUND—	
Heritable Bond, at 3½ per cent	£500 0 0
FIFE AND KINROSS PERPETUAL GOLD CHALLENGE CUP FUND—	
£480 Great Central Railway Co. 3½ per cent Second Debenture Stock	400 0 0
PAISLEY PERPETUAL GOLD CUP FUND—	
£802, 8s. 8d. North British Railway Co. 3 per cent Debenture Stock	600 0 0
RENFREWSHIRE PERPETUAL GOLD CUP FUND—	
£668, 14s. 4d. North British Railway Co. 3 per cent Debenture Stock	500 0 0
WILLIAM TAYLOR MEMORIAL PRIZE FUND—	
£401, 2s. 7d. North British Railway Co. 3 per cent Debenture Stock	300 0 0
AMOUNT OF SPECIAL FUNDS	<u>£2300 0 0</u>

ALEXANDER CROSS, *Hon. Secretary.*
CHARLES M. DOUGLAS, *Chairman of Directors.*
WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 7th January 1914.

ABSTRACT of the ACCOUNTS of the HIGHLAND and CHARGE.

1. BALANCES due by Royal Bank of Scotland on Account Current, at 30th November 1912	£1,158 8 6	
2. ARREARS of Subscriptions outstanding at 30th Nov- ember 1912	£168 14 6	
Whereof due by Members who have compounded for life, and whose arrears are thereby ex- tinguished	£4 10 0	
Sums ordered to be written off	83 19 0	
	<hr/>	88 9 0
		75 5 6
3. INTERESTS AND DIVIDENDS—		
(1) Interests—		
On Heritable Bonds, less Income-tax	£688 12 2	
On Railway Debenture and Preference Stocks, do.	1,565 10 4	
On Colonial Government Stocks, do.	251 3 0	
On Annuity Stocks, do.	69 13 6	
On Deposit Receipts with Edinburgh Cor- poration, do.	40 4 6	
	<hr/>	£2,615 3 6
(2) Dividends—		
On Consols, less Income-tax.	£138 18 0	
On Bank Stocks	1,205 17 0	
	<hr/>	1,344 15 0
		3,959 18 6
4. SUBSCRIPTIONS—		
Annual Subscriptions	£1,502 11 6	
Life Subscriptions	685 7 0	
	<hr/>	2,187 18 6
5. TRANSACTIONS		48 6 6
6. INVESTMENTS REALISED		3,591 10 0
7. SUM SUBSCRIBED for William Taylor Memorial Prize Fund		300 0 0
8. MISCELLANEOUS, including Income-tax repaid		364 19 4
9. RECEIPT on Account of Cupar Show		0 3 7
10. RECEIPTS from Paisley Show		13,620 7 8
	<hr/>	
SUM OF CHARGE		£25,306 18 1

EDINBURGH, 7th January 1914.

AGRICULTURAL SOCIETY of SCOTLAND for the Year 1912-1913.

DISCHARGE.

1. ESTABLISHMENT EXPENSES—		
Salaries and Wages—Retiring Allowance to late Secretary, £400; Secretary's Salary, £600; Chief Clerk, £300; Second Clerk, £150; Typist for eleven months, £59, 11s. 8d.; Messengers, £100, 6s. 8d.		£1,609 18 4
Fou-duty, £28; Taxes, £56, 5s. 4d.		84 5 4
Coals, Gas, and Electric Light		89 10 10
Repairs and Furnishings, £71, 2s. 2d.; Insurances, £18, 3s. 6d.		89 5 8
		<hr/>
		£1,823 0 2
2. FEE to Auditor of Accounts for 1911-1912		75 0 0
3. EDUCATION—		
Forestry—		
Vote to Lectureship in Edinburgh University		£50 0 0
Examiners Fees and Expenses		30 17 0
		<hr/>
		£80 17 0
Agriculture—		
Expenses of National Diploma Examination		138 11 1
		<hr/>
		219 8 1
4. DAIRY DEPARTMENT—		
Expenses of Examination at Kilmarnock, £127, 1s. 11d., less Entry Fees, £30		97 1 11
5. CHEMICAL DEPARTMENT—		
Fee to Chemist		£50 0 0
Fees for Analyses to Members, and Expenses		95 3 8
Pasture Experiments		15 0 0
		<hr/>
		160 3 8
6. VETERINARY DEPARTMENT—		
Medals to Students		15 2 6
7. BOTANICAL AND ENTOMOLOGICAL DEPARTMENT—		
Fee to Botanist		£25 0 0
Testing Samples of Seeds for Members		27 12 0
		<hr/>
		52 12 0
8. EXPENSES in connection with Inspection of Sites for future Shows—		
Travelling Expenses and Outlays		8 11 5
9. SOCIETY'S TRANSACTIONS		852 16 6
10. ORDINARY Printing, £62, 12s. 4d.; Advertising, £24, 6s. 11d.; Stationery, Books, &c., £105, 18s. 2d.; Postages, £74; Bank Charges, &c., £3, 16s. 11d.		270 9 4
11. SALARY of Consulting Engineer (£25, 1912) (£75, 1913)		100 0 0
12. GRANTS to Public Societies—Scottish Meteorological Society, £20; Society for Prevention of Cruelty to Animals, £5		25 0 0
13. MISCELLANEOUS PAYMENTS		133 19 4
14. SPECIAL GRANT— To Glasgow Veterinary College towards cost of Improvement Scheme		100 0 0
15. INVESTMENTS made		7,752 12 0
16. PAYMENTS in connection with Cupar Show—Premiums		116 0 0
17. PAYMENTS in connection with Paisley Show—Premiums, £3678, 19s.; General Expenses, £7326, 19s. 2d.		11,005 18 2
18. PREMIUMS for Local Shows and District Competitions		554 8 7
19. ARREARS of Subscriptions struck off as irrecoverable		76 16 0
20. ARREARS of Subscriptions outstanding at 29th November 1913		141 19 0
21. BALANCES at 29th November 1913 with Royal Bank of Scotland on Account Current—		
Edinburgh Account		£1,685 10 6
Uncashed Cheque		188 11 1
		<hr/>
London Account		£1,546 19 5
		179 0 0
		<hr/>
		1,725 19 5
SUM OF DISCHARGE		<hr/>
		£25,306 18 1

ALEXANDER CROSS, *Hon. Secretary.*

CHARLES M. DOUGLAS, *Chairman of Directors.*

WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS

CHARGE.

1. LOCAL SUBSCRIPTIONS—

Argyllshire, Voluntary Assessment	£72 3 10
Ayrshire, do.	123 12 9
Buteshire, do.	75 0 0
Lanarkshire, do.	376 8 0
Renfrewshire, do.	247 8 7
Town of Paisley—Subscription	250 0 0
Renfrewshire Agricultural Society—Donation	100 0 0
	<hr/>
	£1244 13 2

2. AMOUNT COLLECTED DURING SHOW—

Drawn at Gates	£5,157 7 0
Drawn at Grand Stand	851 11 8
Catalogues and Awards sold	443 10 9
Cloak-Rooms and Lavatories	7 10 3
Horse-Shoeing Competitions—Drawn at Grand Stand	8 9 0
	<hr/>
	6,468 8 8

3. FORAGE SOLD	7 3 5
4. RENT OF STALLS	2,836 18 0
5. RENT OF REFRESHMENT BOOTHS	240 0 0
6. ADVERTISEMENTS IN CATALOGUE AND PREMIUM LIST	108 13 11
7. SUBSCRIPTIONS IN AID OF PREMIUM LIST (including £749, 17s. 6d. from the late Provost Mackean's Fund)	1,111 17 6
8. BALANCE OF THE LATE PROVOST MACKEAN'S FUND	425 3 7
9. INCOME FROM TWEEDDALE MEDAL FUND	17 13 0
10. INCOME FROM FIFE AND KINROSS GOLD CUP FUND	15 3 2
11. INTEREST ON DEPOSIT RECEIPTS	44 13 3
12. SUM RECEIVED FOR INVESTMENT FOR PAISLEY AND RENFREW- SHIRE CUPS REPLICAS FUND	1,100 0 0
	<hr/>
	£18,620 7 8

Note.—From the above balance of £2,705 19 6
There falls to be deducted—
Premiums undrawn at 29th November 1913 179 0 0

£2,526 19 6
Less 'Balance of original Cost of Members' New
Pavilion written off 91 10 0

Making the probable Surplus £2,435 9 6

EDINBURGH, 7th January 1914.

of the PAISLEY SHOW, 1913.

DISCHARGE.

1. SHOWYARD EXPENDITURE—

Fitting up Showyard, £3610, 16s. 10d., less grant from the late Provost's Fund, £250	£3,360	16	10
Fitting up Royal Pavilion	137	6	6
New Sheep Hurdles, £89, 19s. 6d.; Repairing Old Hurdles, £175, 0s. 6d.	265	0	0
Rosettes, £36, 0s. 6d.; Storing and Repairing Turnstiles, £28, 14s. 6d.	64	15	0
Railway Carriage and Cartages, £29, 14s. 10d.; Feeding and Penning Poultry, £10, 1s.; Miscellaneous, £34, 11s. 6d.	74	7	4
	£3,902	5	8
2. FORAGE	302	7	7
3. POLICE	49	13	6
4. TRAVELLING EXPENSES of Judges, Stewards, &c.	160	10	9
5. HOTEL AND LUNCHEONS, &c.—			
Hotel Bills for 23 Directors, 10 Stewards, and 34 Judges	£110	19	2
Luncheons in Showyard for Directors, Judges, Attending Members, and Members of Committee, and Breakfasts and Teas for Do.	232	16	10
Luncheon in Royal Pavilion	55	18	6
	399	14	6
6. MUSIC	128	18	0
7. PRINTING	451	9	1
8. ADVERTISING and Bill-posting, £495, 10s. 5d., less Grant from the late Provost's Fund, £300	195	10	5
9. HIGHLAND INDUSTRIES	8	10	0
10. VETERINARY INSPECTION	10	10	0
11. CONCERT for Attendants	6	12	6
12. TREASURER	25	0	0
13. ENGINEER—Special Allowance	25	0	0
14. FORESTRY EXHIBITION	25	10	0
15. POSTAGES	70	0	0
16. ASSISTANTS and Attendants	232	11	10
17. AMBULANCE	7	7	0
18. POST OFFICE AND TELEPHONE	15	17	6
19. MISCELLANEOUS PAYMENTS	102	17	8
20. REPLICA OF FIFE AND KINROSS CUP	15	3	2
21. SUM INVESTED FOR PAISLEY AND RENFREWSHIRE CUPS REPLICA FUND	1,100	0	0
	£7,235	9	2
22. PREMIUMS drawn at 29th November 1913	3,678	19	0
AMOUNT OF GENERAL EXPENDITURE	£10,914	8	2
BALANCE OF RECEIPTS	2,705	19	6
	£13,620	7	8

ALEXANDER CROSS, *Hon. Secretary.*CHARLES M. DOUGLAS, *Chairman of Directors.*WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the

CHARGE.

I. FUNDS as at 30th November 1912—

Amount on Heritable Bond, at $3\frac{1}{2}$ per cent	£8,500 0 0
£3,193, 6s. 8d. North British Railway Company 3 per cent Debenture Stock, purchased at	2,650 0 0
£550 Lancashire and Yorkshire Railway Company 3 per cent Debenture Stock, purchased at	611 10 6
£190 London and North-Western Railway Company 4 per cent Guaranteed Stock, purchased at	259 1 11
	<hr/> £7,020 12 5
BALANCE in Royal Bank of Scotland on Account Current	625 11 9
	<hr/> £7,646 4 2

II. INTEREST ON INVESTMENTS—

On £3,500 on Heritable Bond at $3\frac{1}{2}$ per cent, £131, 5s., less tax £7, 13s.	£123 12 0
On £3,193, 6s. 8d. North British Railway Company 3 per cent Debenture Stock, £95, 16s., less tax £5, 11s. 10d.	90 4 2
On £550 Lancashire and Yorkshire Railway Com- pany 3 per cent Debenture Stock, £16, 10s., less tax 19s. 4d.	15 10 8
On £190 London and North-Western Rail- way Company 4 per cent Guaranteed Stock, £7, 12s., less tax 8s. 10d.	7 8 2
On £550 Queensland $3\frac{1}{2}$ per cent Inscribed Stock for half-year, £8, 15s., less tax 10s. 2d.	8 4 10
	<hr/> 244 14 10

SUM OF CHARGE £7,890 19 0

EDINBURGH, 7th January 1914.

ARGYLL NAVAL FUND for Year 1912-1913.**DISCHARGE.**

I. ALLOWANCES to the five following Recipients—			
Francis Grant Hunter (eighth year)	.	.	£40 0 0
Patrick Bruce Lauder (first half of seventh year)	.	.	20 0 0
M. C. Despard (fourth year)	.	.	40 0 0
H. R. Gordon Cumming (third year)	.	.	40 0 0
M. H. Hopkins (second year)	.	.	40 0 0
			<hr/>
			£180 0 0
II. ADVERTISING	.	.	6 15 11
III. INVESTMENT made—			
£500 Queensland 3½ per cent Inscribed Stock, 1950-70, at 89½, £448, 15s., Commission, &c.,			
£1, 6s.	.	.	<u>£450 1 0</u>
IV. FUNDS as at 29th November 1913—			
Amount on Heritable Bond, at 3½ per cent	.	£3,500	0 0
£3,193, 6s. 8d. North British Railway Company 3 per cent Debenture Stock, purchased at	.	2,650	0 0
£550 Lancashire and Yorkshire Railway Com- pany 3 per cent Debenture Stock, purchased at	.	611	10 6
£500 Queensland 3½ per cent Inscribed Stock, 1950-70, purchased at	.	450	1 0
£190 London and North-Western Railway Com- pany 4 per cent Guaranteed Stock, purchased at	.	259	1 11
			<hr/>
			£7,470 13 5
Balance in Royal Bank of Scotland on Account Current	.	233	9 8
			<hr/>
			7,704 3 1
SUM OF DISCHARGE			£7,890 19 0

ALEXANDER CROSS, *Hon. Secretary.*CHARLES M. DOUGLAS, *Chairman of Directors.*WM. HOME COOK, C.A., *Auditor.*

VIEW OF RECEIPTS AND PAYMENTS

For the Year 1912-1913.

RECEIPTS.

1. ANNUAL SUBSCRIPTIONS AND ARREARS received	£1,359	2	0
2. LIFE SUBSCRIPTIONS	685	7	0
	<u>£2,044</u>	<u>9</u>	<u>0</u>
3. INTERESTS AND DIVIDENDS—			
Interests	£2,615	3	6
Dividends	1,344	15	0
		<u>3,959</u>	<u>18 6</u>
4. TRANSACTIONS		48	6 6
5. MISCELLANEOUS, including INCOME-TAX repaid		364	19 4
6. RECEIPT on account of Cupar Show		0	3 7
7. RECEIPTS from Paisley Show		13,620	7 8
SUM OF RECEIPTS	£20,038	4	7

PAYMENTS.

1. ESTABLISHMENT EXPENSES—			
Salaries and Wages	£1,609	18	4
Fcu - duty, Taxes, Coals, Gas, Insurance, Repairs and Furnishings	213	1	10
	<u>£1,823</u>	<u>0</u>	<u>2</u>
2. FEE TO AUDITOR of Accounts for year 1911-1912	75	0	0
3. EDUCATION	219	8	1
4. DAIRY DEPARTMENT	97	1	11
5. CHEMICAL DEPARTMENT	160	3	8
6. VETERINARY DEPARTMENT	15	2	6
7. BOTANICAL AND ENTOMOLOGICAL DEPARTMENT	52	12	0
8. EXPENSES in connection with Inspection of Sites for future Shows	8	11	5
9. SOCIETY'S TRANSACTIONS	852	16	6
10. ORDINARY Printing, Advertising, and Postages	270	9	4
11. SALARY of Consulting Engineer	100	0	0
12. GRANTS to Public Societies	25	0	0
13. MISCELLANEOUS PAYMENTS	133	19	4
14. SPECIAL GRANT	100	0	0
15. PAYMENTS in connection with Cupar Show	116	0	0
16. PAYMENTS in connection with Paisley Show—			
Premiums	£3,678	19	0
General Expenses	7,326	19	2
		<u>11,005</u>	<u>18 2</u>
17. PREMIUMS for Local Shows and District Competitions	554	8	7
SUM OF PAYMENTS	<u>15,609</u>	<u>11</u>	<u>8</u>
BALANCE OF RECEIPTS	<u>£4,428</u>	<u>12</u>	<u>11</u>

ALEXANDER CROSS, *Hon. Secretary.*
 CHARLES M. DOUGLAS, *Chairman of Directors.*
 WM. HOME COOK, C.A., *Auditor.*

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 5TH MARCH 1913.

Sir ARCHD. BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Present.—*Ordinary Directors*—Mr C. M. Cameron; Major F. J. Carruthers, Mr Alexander Cross; Mr John M'Hutchen Dobbie; Mr Charles Douglas; Mr W. S. Ferguson; Mr David Ferrie; Dr R. Shirra Gibb; Captain Alex. T. Gordon; Mr Hugh M. Leadbetter; Mr James M'Laren; Mr Robert Macmillan; Mr C. H. Scott Plummer; Mr James Wilson; Mr Robert C. Young. *Extraordinary Directors*—Mr F. W. Christie; Mr James I. Davidson; Mr John Edmond; Mr William Elliot; Mr Charles Howatson; Provost W. Muir Mackean; Mr John M. Martin; Sir Hugh Shaw Stewart, Bart. *Consulting Engineer*—Professor Stanfield. *Chemist*—Mr J. F. Tocher, B.Sc. *Auditor*—Mr William Home Cook, C.A.

Paisley Show, 1913.

Provost Muir Mackean's Fund.—Provost MUIR MACKEAN reported that the amount of the Fund collected by him had gradually increased since last Meeting of the Board, and now reached a sum of £3300. He proposed to close the Fund, and desired to pay a tribute to the contributors to the Fund, especially those in the Burgh of Paisley and County of Renfrew. The contributions had been given with extraordinary liberality and with a very fine spirit.

Mr CROSS spoke in high terms of the work accomplished by Provost Muir Mackean.

The CHAIRMAN expressed the great indebtedness which the Board was under to Provost Muir Mackean, and conveyed to him the cordial thanks of the Directors.

Allocation of Provost's Fund, &c.—On the recommendation of the Shows Committee it was agreed (1) that the following sums be allocated from the Provost's Fund for the purposes mentioned:—

PAISLEY PERPETUAL GOLD CHALLENGE CUP	£300
PAISLEY PERPETUAL GOLD CHALLENGE CUP, Fund to provide	
Replica	600
RENFREWSHIRE PERPETUAL GOLD CHALLENGE CUP	250
RENFREWSHIRE PERPETUAL GOLD CHALLENGE CUP, Fund to provide	
Replica	500
CATTLE (GROUP PRIZES)—	
Shorthorn, Aberdeen-Angus, Galloway, Highland	60
Ayrshire, Milk Yield Classes (per Sir Hugh Shaw Stewart, Bart.)	20
Ayrshire, Breeders' Prizes	20
Highland, Breeders' Prizes	20
British Holstein	10
HORSES—	
Clydesdale Stallion, Sire of best five animals	15
Hunters (including Jumping Class)	315
Polo Ponies (including Serpentine Bending Test)	40
Hackneys	10
Driving Competitions	100
Draught Geldings in Harness	20

Van Horses in Harness	£20
Milk Turn-out	16
Dowager-Lady Smiley's Cup (£50) . . . . .	...
Miss Stewart Clark's Silver Cup (£25) . . . . .	...
SHEEP—	
Blackface, Class for groups	18
BUTTER, Additional Prizes	17
HORSE-SHOING, Additional Prizes	12
SHOWYARD—	
Advertising and Billposting	300
Improvements in Showyard	250
Music and Military Display	200
	<hr/>
	£3113

(2) That the Fife and Kinross Perpetual Gold Challenge Cup be offered this year to the best animal of the Ayrshire breed, the Paisley Gold Cup to the best male Clydesdale, and the Renfrewshire Gold Cup to the best sheep of the Blackface breed; (3) that the Society contribute £200 towards the classes for Hunters and £91 towards the classes for Harness Horses; (4) that the following Sub-Committee be appointed to advise with the Engineer in regard to improvements, &c., in the Showyard: Mr Cross, Mr Ferrie, and Mr J. T. M'Laren; (5) that the following Sub-Committees be appointed to assist the Secretary in securing entries, &c., in connection with the following classes: *Hunters*—Mr Cross, Captain Gilmour, Mr Scott Plummer, and Mr Hugh Neilson; *Driving Classes*—Mr Kerr, Mr Leadbetter, Mr Martin, Dr Wilson, and Mr Andrew Hunter; (6) that the following rule be reinserted in the Regulations: "40a. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward of Cattle, or a representative of the Society duly authorised by him."

On the motion of Captain GORDON, it was decided to award the Society's large Silver Medal to the breeder of the Champion animal in the various sections, the additional cost to be borne by the Provost's Fund.

Prize List.—A proof of the Prize List was submitted for revision.

Sir Hugh Shaw Stewart, Bart., suggested that classes be instituted for horses suitable for Army purposes. He stated that the local Territorial Association would be willing to contribute £20 towards the prizes, and asked that the balance be allocated from the Provost's Fund.

The proposal was agreed to, and the following Committee was appointed, with powers, to arrange the classes: Provost Muir Mackean, Mr Cross, Mr Barclay, and Sir Hugh Shaw Stewart, Bart. The time at which these classes should be judged and paraded was left to the Stewards of Horses, and the nomination of a Judge to the above Committee and the Stewards of Horses, jointly.

On the motion of Mr FERGUSON, the prizes in the classes for British Holstein Cattle were adjusted as follows: Aged Bulls and Cows, each, £9, £6, and £3; Young Bulls and Heifers, each, £6, £4, and £2.

Mr J. M. MARTIN moved that President's Medals be not offered to the classes for Van Horses and Milk Turn-outs, and this was agreed to.

A further motion by Mr MARTIN, that in the classes for Harness Horses an animal entered in one class shall be allowed to enter in any other class for which it has height qualification, was also agreed to.

The proof of the Prize List, subject to the above additions and emendations, was approved.

Judges of Wool and of Horse-Shoeing.—On the recommendation of the Shows Committee, it was agreed to appoint Mr Alexander Willison, Manufacturer, Dalry, Judge of Wool for Mr Richmond's Special Prize; and Principal Dewar, F.R.C.V.S., Judge of Horse-Shoeing.

On the motion of Mr CHRISTIE, seconded by Mr Cross, Mr Robert Muir, Monkton, Ayrshire, was appointed reserve Judge of Horse-Shoeing.

Other Judges.—Mr Martin stated that the Harness classes were likely to be very large, and that a second Judge of Hackneys, Ponies, and Harness Horses would be necessary. He suggested the name of Mr Christopher W. Wilson, Rigmaden Park, Kirkby-Lonsdale, and this was agreed to.

The Chairman said they had learned with regret of the death of Mr Buchanan, Lettre, Killearn, one of the Judges of Blackface Sheep, and stated that the reserve Judge, Mr Thomas Carswell, Chirmorrie, Barrhill, Ayrshire, would be called upon to take his place.

Special Prizes.—An offer by the Polo and Riding Pony Society of £15 towards the Highland Pony classes, on condition that the prize-winners shall be registered in the

Highland Section of the Polo and Riding Pony Stud-Book, at a cost of 2s. each, was submitted.

The Chairman referred to the decision of the Board at a previous Meeting, when it was decided that ponies could be entered in these classes without restriction as to registration. He thought that the Board had no alternative but to decline the offer. This was agreed to.

An offer by the Highland Pony Society of £15 towards the classes for Highland Ponies, unconditionally, was accepted, and the thanks of the Board accorded to the donors.

An offer by Mr Hagart Speirs of Elderslie of a Silver Cup for the best female Clydesdale, bred and owned by a member of the Renfrewshire Agricultural Society, was submitted.

A recommendation by the Shows Committee was read to the effect that this Cup could not be accepted under the conditions mentioned, and suggesting that it might be offered to the Renfrewshire Agricultural Society, to be competed for and awarded on the same lines as the Derby Sweepstakes.

Derby Classes.—Mr J. M. MARTIN moved: "That every facility be given to the Renfrewshire Agricultural Society for the exhibition of their local Derby classes for Ayrshire Heifers and Yearling Colts and Fillies, and for Mr Hagart Speirs' Cup for Clydesdale Mares, with the use of the Society's Judges, if desired, but that these competitions be not included in the Society's Premium List and Catalogue; also, that a copy of this resolution be sent to the Secretary of the Renfrewshire Agricultural Society, in order that he may be in a position to inform members of his Society that entries for these classes must be forwarded to him."

This motion was seconded by Mr C. M. CAMERON, and agreed to.

Hawick Show, 1914.

The fixing of the date of the Hawick Show was deferred, as it was thought desirable first to ascertain when the Royal Agricultural Society's Show was to be held.

Hefting of Cows.

A letter was submitted from the Secretary of the Glasgow and West of Scotland Society for the Prevention of Cruelty to Animals dealing further with the question of Hefting of Cows at Cattle Shows, suggesting the reintroduction of the rule that cows be milked dry the night before being shown, and offering to arrange for two officers of the Society to be present at 6 o'clock each morning to assist the Stewards in examining the animals.

The Chairman stated that no evidence of the existence of hefting had been submitted, and the Directors knew that no such thing took place. It had been thought well, however, to reintroduce the rule which was deleted in 1900.

It was resolved that the Secretary be instructed to notify the Society of the reintroduction of the rule, and at the same time to inform the Society that the Board could not agree to the proposal that officers of the Society be present in the Showyard at 6 o'clock each morning, the duty of inspecting the animals being one which devolved upon the Stewards of Cattle.

Poultry Instructors' and Investigators' Association.

A letter from the International Association of Poultry Instructors and Investigators, inviting the Society to become a Patron of the Association, which had been referred to the Finance and Shows Committees for consideration and report, was again submitted.

A recommendation by these Committees, that the invitation be not accepted, was adopted.

Highland Home Industries.

An application from the Co-operative Council of Highland Home Industries, for the grant of a Joint Stand, with Mrs Traill, Shetland, for the sale of Highland Home Industries at the Paisley Show, was granted.

Glasgow Veterinary College.

A letter was read from the Secretary of the Glasgow Veterinary College, applying for an additional grant towards the Improvements Scheme of the College.

A Minute of the Finance Committee, proposing that a further grant of £100 be given, was read.

On the motion of Mr CROSS, the Minute was approved, and it was agreed to recommend to the General Meeting of the Society in June that an additional grant of £100 be given.

Polo and Riding Pony Society.

A letter was read from Viscount Helmsley, M.P., President of the Polo and Riding Pony Society, expressing the hope that the Highland and Agricultural Society would use its influence to discourage the formation of the proposed new Stud-Book for Highland Ponies, and would give continued recognition and support to the Highland Section of the Polo and Riding Pony Society.

After discussion, it was agreed to acknowledge receipt of the letter, and to express the hope that the Polo and Riding Pony Society and the Highland Pony Society would arrive at an understanding so as to avoid the formation of two Stud-Books.

Education.

On the recommendation of the Education Committee, Mr A. T. Gillanders, Alnwick, and Dr Nisbet, Glasgow, were appointed Examiners in Forestry at the forthcoming examinations for the Society's Certificates in Forestry, with Mr John Boyd as reserve.

Royalty to Visit Paisley Show.

The CHAIRMAN stated that, although he had not yet received official intimation, he had reason to believe that their Highnesses the Duke and Duchess of Teck proposed to visit the Show at Paisley, on Wednesday and Thursday, the 9th and 10th July.

"Scrapie" in Sheep.

Dr SHIRRA GIBB made a statement with regard to "Scrapie" in Sheep. He said that, while he was not prepared to give details of the progress of the investigations which were being carried out, he could assure the Directors that the matter was being taken up in a serious and most enlightened manner, and he hoped to be able to report more fully to the Board at a later date.

MEETING OF DIRECTORS, 2ND APRIL 1913.

Sir ARCHD. BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Present.—Ordinary Directors—Mr A. H. Anderson; Mr John M. Aitken; Major F. J. Carruthers; Mr Alexander Cross; Mr John M'Hutohen Dobbie; Mr Charles Douglas; Mr David Ferrie; Dr R. Shirra Gibb; Mr Hugh M. Leadbetter; Mr John M'Caig; Mr P. B. MacIntyre; Mr J. Huntly Macdonald; Mr J. T. M'Laren; Mr Robert Macmillan; Mr A. B. Nicolson; Mr C. H. Scott Plummer; Mr James Wilson. *Extraordinary Directors*—Mr George Barclay; Mr F. W. Christie; Mr James I. Davidson; Mr William Elliot; Mr J. H. Munro Mackenzie; Mr W. T. Malcolm; Mr John M. Martin; Sir Hugh Shaw Stewart, Bart. *Consulting Engineer*—Professor Stanfield. *Treasurer*—Mr David Wilson, D.Sc. *Auditor*—Mr Wm. Home Cook, C.A.

The late Mr A. M. Gordon.

Before proceeding with the business of the Meeting the CHAIRMAN referred in sympathetic terms to the death of Mr Alexander M. Gordon of Newton, Honorary Secretary of the Society. It was unanimously resolved to record in the Minutes an expression of the deep sorrow with which the Board had learned of his death, and their sense of the long and valuable services rendered by him to the Society as Chairman of the Board of Directors, as a Director, as Convener and member of various Committees, and as Honorary Secretary of the Society during the past seven years.

The late Mr Laurence Johnston.

The CHAIRMAN also referred in appropriate terms to the death of Mr Laurence Johnston of Sands, an Extraordinary Director of the Society, and it was unanimously resolved that a Resolution of sympathy be entered in the Minutes, and a copy of it sent to Mrs Johnston.

Paisley Show.

Special Prize.—An offer by the Polo and Riding Pony Society of a Prize of £15 for the best Highland Pony Stallion or Mare actually registered with a number in the Highland Section of the Polo and Riding Pony Stud-Book was submitted.

On the motion of Mr J. H. MUNRO MACKENZIE, seconded by Mr LEADBETTER, the prize was accepted, and a vote of thanks accorded to the Polo and Riding Pony Society.

Western Club, Glasgow.—The SECRETARY read a letter from the Western Club, Glasgow, applying for space in the Showyard for a Luncheon and Tea Pavilion, for the use of members of the Club and Associated Clubs.

It was agreed that a free site be granted to the Club for the purpose, under the following conditions: (1) The total space not to exceed 120 feet square, and the pavilion or tents erected thereon to be subject to the approval of the Society's Engineer; (2) One of the Society's four licensed caterers to be employed by the Club; (3) The caterers to be communicated with by the Secretary and a satisfactory arrangement come to between them.

Renfrewshire Territorial Force Association.—A letter was read from the Renfrewshire Territorial Force Association offering to provide an escort and guard of honour on the occasion of the visit of their Highnesses the Duke and Duchess of Teck, on the 9th July; the escort to consist of members of the Paisley Squadron of the Queen's Own Glasgow Yeomanry, and the guard of honour to be furnished by the Works Company, Renfrewshire Fortress Royal Engineers. A parade of the members of the National Reserve of the County was also proposed. The Association stated that all expenses would be met from private funds for which the Association would hold itself responsible.

It was agreed to accept the offer, subject to the adjustment of details by the Local Committee.

Derby Classes.—A letter from the SECRETARY of the Renfrewshire Agricultural Society was submitted, requesting the Board to reconsider its decision not to insert these Classes in the Premium List and Catalogue.

On the recommendation of the Shows Committee it was agreed that the local Derby Classes for yearling colts and fillies, and three-year-old Ayrshire heifers, be inserted in the Premium List and Catalogue.

Ponies in Saddle.—It was agreed to provide a class for Ponies in Saddle, under 10½ hands, ponies entered in other classes to be admitted to this class without additional entry fee. It was left to Dr Douglas and Mr Barclay to arrange details for insertion in the Premium List.

Attending Members.—The following Directors were appointed as Attending Members: *Shorthorn*—A. H. Anderson and J. H. Macdonald; *Aberdeen Angus*—J. D. Fletcher and Captain Alexr. T. Gordon; *Galloway*—William Duthie and C. M. Cameron; *Highland*—Sir A. Buchan Hepburn and C. H. Scott Plummer; *Ayrshire*—Sir Hugh Shaw Stewart, Bart., and R. Macmillan; *Jersey*—T. C. Lindsay; *Shetland Cattle*—Charles Douglas and F. W. Christie; *British Holstein*—John Edmond; *Fat Cattle and Fat Sheep*—James A. Hunter; *Stallions, Entire Colts, and Geldings*—Captain John Gilmour and John M'Caig; *Draught Mares and Fillies*—John M. Martin and James Wilson; *Hunters*—Major Carruthers and George Barclay; *Hackneys, Ponies, and Harness Horses*—W. Elliot and A. B. Nicolson; *Highland Ponies*—P. B. Macintyre; *Shetland Ponies*—F. W. Christie and J. H. Munro Mackenzie; *Blackface*—John Marr and John M. Aitken; *Cheviots*—Charles Howatson and R. C. Young; *Border Leicester*—David Wilson; *Half-Bred*—Alexr. Cross; *Shropshire*—James I. Davidson; *Oxford Down*—J. Hasling Turner; *Suffolk*—Captain Thomas Hope; *Poultry*—Sir John Macpherson-Grant; *Dairy Produce*—Provost Maclean.

Local Society Grants, &c.

A Minute of Meeting of the Shows Committee, dated 2nd April, was read and approved.

The Minute recommended (1) That the £15 Stallion Grants allocated last year to the Aird and Strathglass Agricultural Society and the Lower Ward of Renfrewshire Stallion Society be not paid, as the Stallions engaged by these Societies had not been registered in the Register of Draught Stallions kept by the Board of Agriculture, in accordance with the conditions laid down by the Society; (2) That a Special Grant of £25 be given to the Northern Counties Joint Show to be held at Inverness this year; (3) That the Society's medal for long service be awarded to Mr John Thom, Clydesmill, Cambuslang, who had been continuously for 30 years in the service of Mr James Wilson, Westburn. It was remitted to a Committee consisting of Mr M'Hutchen Dobbie, Mr Martin, Mr Scott Plummer, and the Chairman of the Board, to consider the whole question of the award of the long service medal.

Additional Honorary Associates.

Mr J. M. MARTIN moved "That the Board consider the nomination of additional Honorary Associates," and this was agreed to.

Mr Martin further proposed that Mr James Wilson, who had just retired from the position of head of the Agricultural Department of the United States, be elected an Honorary Associate. Mr Wilson was eminently qualified to receive this honour, and there would be an excellent opportunity of conferring it upon him on the occasion of

his visit to this country at the time of the Paisley Show. He suggested that a small Committee be appointed to consider, before next meeting, the names of other gentlemen on whom the honour might be conferred.

The suggestion was unanimously agreed to, and the following Committee was appointed: The Chairman, Dr Douglas, Dr Shirra Gibb, Dr Wilson, and Mr Martin.

General Meeting.

The General Meeting of the Society and Meeting of Directors for June were fixed to be held on Wednesday, 4th June.

Finance.

On the recommendation of the Finance Committee, it was decided that a retiring allowance of £20 per annum be paid to Mrs Simpson on the death of Mr Simpson in the event of his predeceasing her.

MEETING OF DIRECTORS, 7TH MAY 1913.

Sir ARCHD. BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Present.—Ordinary Directors—Major F. J. Carruthers; Mr Alexander Cross; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Mr W. S. Ferguson; Mr David Ferrie; Dr R. Shirra Gibb; Mr Hugh M. Leadbetter; Mr James M'Laren; Mr J. T. M'Laren; Mr R. Macmillan; Mr James Wilson. *Extraordinary Directors*—Mr F. W. Christie; Mr W. T. Malcolm; Mr John M. Martin; Sir Hugh Shaw Stewart, Bart. *Consulting Engineer*—Professor Stanfield. *Treasurer*—Mr David Wilson, D.Sc. *Zoologist*—Dr R. Stewart MacDougall. *Auditor*—Mr Wm. Home Cook, C.A. *Chemist*—Mr J. F. Tocher, B.Sc.

Paisley Show, 1913.

West of Scotland Agricultural College.—An application was submitted from the West of Scotland Agricultural College for space for a stand, 60 feet by 20 feet, at the Paisley Show.

On the motion of Dr WILSON, seconded by Dr SHIRRA GIBB, it was decided to grant the application.

A letter from the Secretary of the College was also read asking if the Directors would agree to offer medals for the best appliances for Bee-keeping at the Show.

After discussion, the Secretary was instructed to ascertain the number of medals which the College desired, at the same time suggesting that an exhibition of Bees would be an interesting feature in the Showyard.

Time of Parades.—A proposal by Mr Leadbetter that the Cattle Parade should commence somewhat earlier, in order to give more time for the Horse Parade, was remitted to the Stewards for consideration and report.

Guard of Honour, &c.—On the motion of Sir HUGH SHAW STEWART, Bart., it was agreed that the Guard of Honour be admitted free into the Showyard on Wednesday, 9th July; and that the Members of the National Reserve of the County of Renfrew, and a detachment of the Boy Scouts, be similarly admitted, in order to be inspected along with the Guard of Honour.

Nomination of Directors.

The Secretary submitted the usual Report of Meetings of Members held in the various Show Districts for the nomination of Directors.

Dr R. SHIRRA GIBB moved that Lord Dunglass be nominated as a Director to represent the Border District, as both of the members nominated for that district had withdrawn.

Mr LEADBETTER seconded, and the motion was unanimously agreed to.

National Diploma in Agriculture.

The Secretary submitted the Report on the results of the recent Examination at Leeds for the National Diploma in Agriculture.

Forestry Examination.

The Secretary submitted the Report on the results of the recent Examination in Forestry held by the Society.

Milk and Dairies (Scotland) Bill.

Mr DOUGLAS submitted the following motion: "That the Directors arrange a Conference regarding the Milk and Dairies (Scotland) Bill." He said that this course had been followed on the introduction of the previous Bill in 1908, and it had been so far justified that the present Bill embodied a large number of the suggestions then proposed.

Mr M'HUTCHEN DOBBIE seconded, and the motion was agreed to.

It was decided that the following bodies be invited to send representatives to the Conference, in addition to the representatives of the Highland and Agricultural Society; The Scottish Chamber of Agriculture; the Federation of Dairy Farmers' Associations; the Glasgow Dairymen's Association; the Edinburgh and Leith Dairymen's Association; and the Federation of Co-operative Dairy Societies.

The following were appointed representatives from the Highland Society: Dr Douglas, Convener; Mr Aitken, Mr Cross, Mr M'Hutchen Dobbie, Dr Shirra Gibb, and Mr M'Caig.

It was agreed to leave it to Dr Douglas, as Convener, to fix the date of, and make arrangements for, the Conference.

Long Service Medals.

A Minute of Meeting of the Special Committee, dated 7th May, was submitted.

The Minute recommended that the present system of grants of medals to District Societies, to be awarded for long service, be discontinued, and that in future an illuminated certificate and pendant medal be awarded to farm servants, male and female, having an approved service of not less than 30 years on one holding, or with the same employer. Applications to be lodged before the 1st of November in each year.

After discussion the Minute was approved. It was agreed, on the suggestion of Mr Malcolm, that all applications for the Medal and Certificate must be countersigned by a Member of the Society.

Report by Chemist on Deficient Samples.

The Society's Chemist submitted a Report on deficient samples of Manures and Feeding-stuffs analysed by him for Members since the Meeting of the Board in January.

Mr W. S. FERGUSON said he thought the Directors should instruct the Chemist to carry out some experiments with a view to determining what was the active poisonous principle contained in mutton peas referred to in the report.

Dr WILSON said it would be advisable to find out first what labour and expense would be involved in such experiments. He suggested that the matter might be remitted to the Science Committee, with powers, and this was agreed to.

Office of Honorary Secretary.

On the recommendation of the Office-bearers' Committee, it was unanimously agreed to nominate Mr Alexander Cross of Knockdon for election as Honorary Secretary of the Society in room of the late Mr Alexander M. Gordon of Newton.

Aberdeen College of Agriculture.

On the recommendation of the Office-bearers' Committee, Captain Alexander T. Gordon was appointed one of the Society's representatives on the Board of Governors of the Aberdeen and North of Scotland College of Agriculture, in room of his father, the late Alexander M. Gordon.

Appointment of Caretaker.

On the recommendation of the Finance Committee Mr Andrew Brown was appointed Caretaker to the Society in place of Mr William Simpson, who retires at Martinmas next.

Provost Muir Mackean.

The CHAIRMAN referred to a letter he had received from Provost Muir Mackean of Paisley, expressing regret at his inability to attend the Meetings of the Board, as he had been confined to bed for some time past. The CHAIRMAN proposed that a Silver Tea-Tray, with the signatures of the President and Directors engraved upon it, should be presented to Provost Muir Mackean as a mark of appreciation of the valuable services rendered by him to the Society.

The proposal was unanimously agreed to.

MEETING OF DIRECTORS, 4TH JUNE 1913.

Sir ARCHD. BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Present.—*Ordinary Directors*—Mr A. H. Anderson; Mr Alexander Cross; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Mr William Duthie; Mr W. S. Ferguson; Mr David Ferrie; Mr P. B. MacIntyre; Mr Hugh M. Leadbetter; Mr James M'Laren; Mr J. T. M'Laren; Mr R. Macmillan; Mr R. C. Young. *Extraordinary Directors*—Mr F. W. Christie; Mr James I. Davidson; Mr John Edmond; Mr Charles Howatson; Mr W. T. Malcolm; Mr John M. Martin; Sir Hugh Shaw Stewart, Bart. *Consulting Engineer*—Professor Stanfield. *Treasurer*—Mr David Wilson, D.Sc. *Zoologist*—Mr R. Stewart MacDougall, D.Sc. *Auditor*—Mr Wm. Home Cook, C.A. *Chemist*—Mr J. F. Tocher, B.Sc.

Paisley Show.

Local Fund.—Letters were submitted from the County Clerk of Lanark remitting voluntary assessment of £376, 8s., and the County Clerk of Ayr remitting voluntary assessment of £123, 12s. 9d.

The Secretary was instructed to convey the cordial thanks of the Board to the County Councils of Lanark and Ayr.

Medals for Bee-keeping Appliances.—The Chairman stated that, as instructed at last meeting, the Secretary had written to the West of Scotland College of Agriculture asking the number of medals which the College desired for bee-keeping appliances, and suggesting that an exhibition of bees would be an interesting feature in the Showyard. The Secretary of the College had replied that it was proposed to have a demonstration tent in the Showyard, and asked that a grant of seven medals be made.

On the motion of Mr CROSS, seconded by Mr MALCOLM, it was agreed to give seven medals as desired.

Time of Parades.—On the recommendation of the Stewards it was decided that the forenoon parade of Cattle should commence at 10.15 instead of 10.30, so as to allow of more time for the horse parade: the afternoon hours to remain as before.

Polo Pony Classes.—(1) The Chairman stated that representations had been made that it would be desirable to subdivide the Polo Pony Class into Heavy and Light Classes, but in view of the fact that only nine entries had been received it was felt that the proposal could not be entertained, and this was agreed to.

(2) The Secretary read a Minute of Meeting of Stewards, dated 4th June, dealing with the proposal that polo ponies should come in on the Wednesday and remain in the Show for two days only. The Minute recommended that these Ponies, with the exception of those entered merely for the Bending Contest or Ball Race, should be required to be in the Showyard for the four days of the Show, and this was agreed to.

Attending Members.—The Secretary reported that a Meeting of the Local Committee had been held at Paisley on 12th May, when Attending Members on the various classes of Stock were appointed.

Western Club, Glasgow.—A letter was read from the Western Club inviting the Directors and Office-bearers of the Society to become honorary members of the Club's Pavilion in the Showyard. It was agreed to accept the invitation, and the Secretary was instructed to write to the Western Club conveying the thanks of the Directors.

Edinburgh Show, 1915.

It was remitted to the following Committee to consider and report to the Board as to a suitable site for the Show of 1915—Mr Martin, Convener, Mr Dobbie, Mr Ferrie, Mr Leadbetter, Mr J. T. M'Laren, and Mr Malcolm.

Milk and Dairies (Scotland) Bill.

A report of the Conference held in the Society's Rooms on 30th May with reference to the above-mentioned Bill was laid on the table.

Dr DOUGLAS said the conclusions of the Conference were provisional and subject to revision at a future meeting. He understood that the Board would agree to bear the small expense of printing and sending the resolutions of the Conference to Members of Parliament and others.

This was agreed to.

Publications.

On the recommendation of the Publications Committee, payments to writers of articles in the 'Transactions,' amounting to £186, were authorised.

Presentation to Provost Muir Mackean.

The CHAIRMAN again referred to what had been done by Provost Muir Mackean, Paisley, in assisting to make the Show at Paisley a success, and said that the Directors felt that some small token of acknowledgment from them would not be out of place and would be appreciated. Accordingly it had been decided to present Provost Muir Mackean with a Silver Tea-Tray on which the signatures of the Directors were reproduced. Owing to the state of the Provost's health it was necessary to have the presentation made at once, and it had been sent off without delay. Provost Muir Mackean was unable to write, but a letter had been received from Mrs Mackean thanking the Directors, and stating how much their action was appreciated.

Finance.

On the recommendation of the Finance Committee, it was agreed that the Chemist to the Society receive his out-of-pocket expenses incurred in attending the monthly meetings of the Board in Edinburgh.

MEETING OF DEPUTATION OF DIRECTORS HELD IN SHOWYARD,
PAISLEY, 9TH JULY 1918.

Sir ARCHD. BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Present.—Ordinary Directors—Mr A. H. Anderson; Mr C. M. Cameron; Major F. J. Carruthers; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Mr Wm. Duthie; Mr W. S. Ferguson; Mr David Ferrie; Dr R. Shirra Gibb; Mr J. E. Kerr; Mr P. B. MacIntyre; Mr J. Huntly Macdonald; Mr John M'Caig; Mr Hugh M. Leadbetter; Mr James M'Laren; Mr J. T. M'Laren; Mr R. Macmillan; Mr John Marr; Mr C. H. Scott Plummer; Mr James Wilson; Mr R. C. Young. *Extraordinary Directors*—Mr F. W. Christie; Mr W. Elliot; Mr T. C. Lindsay; Mr W. T. Malcolm; Mr John M. Martin; Mr J. H. Munro Mackenzie. *Honorary Secretary*—Mr Alexander Cross.

The late Provost Muir Mackean.

Before proceeding with the business of the Meeting the CHAIRMAN made feeling reference to the death of Provost Muir Mackean of Paisley, and it was unanimously resolved to record in the Minutes an expression of the profound regret with which the Board of Directors received the intimation of his death, and their sense of the great services rendered by him to the Society in connection with the Society's first Show at Paisley.

The late Mr James Greenshields.

The CHAIRMAN referred to the death of Mr James Greenshields, West Town, Coalburn, an Extraordinary Director of the Society, and moved that the Directors record in the Minutes an expression of the deep regret with which they received the intimation of his death, and their sense of the valuable services rendered by him to the Society.

Protests.

The CHAIRMAN stated that no Protests had been lodged.

Shetland Cattle.

Dr DOUGLAS stated that the champion animal in the Shetland Cattle Classes was entered as "Breeder unknown," and that accordingly the judges had been unable to award the breeder's medal. The only alternative to withholding the medal appeared to be to give it to the breeder of the reserve animal.

It was decided that the medal be not awarded.

Polo Pony Classes.

The CHAIRMAN intimated that the Polo Pony Bending Contest and Ball Race had been cancelled owing to want of entries.

Gold Cups.

At the suggestion of Mr CROSS consideration was given to the question of the Classes to which the Society's three gold cups should be offered on the occasion of

next year's Show at Hawick. The Fife and Kinross Perpetual Gold Challenge Cup was presented to the Society on the understanding that it should be offered to the predominant breed in the district in which the Show was held, and it therefore followed that next year it would be offered to one of the breeds of sheep. With regard to the Paisley Gold Cup and the Renfrewshire Gold Cup there was no such condition.

After full discussion it was resolved to recommend to the Board that two of the gold cups be offered for Sheep at the Hawick Show, the allocation of the third gold cup being left for consideration by the Shows Committee at the Meeting in November.

Judge of Van Horses, &c.

Mr James M'Laren was unanimously appointed to act as Judge of Draught Geldings in Harness, Van Horses, and Milk Turn-out.

Highland Ponies.

On the motion of Mr MUNRO MACKENZIE it was unanimously agreed to award prizes of £5 each to the "very highly commended" animals entered as "extra stock" in the Highland Pony Classes, in addition to the Silver Medals awarded by the Society.

MEETING OF DIRECTORS, 5TH NOVEMBER 1913.

Sir ARCH. BUCHAN HEPBURN of Smeaton, Bart., and afterwards
CHARLES DOUGLAS, D.Sc., of Auchlochan, in the Chair.

Present.—*Vice-Presidents*—Mr William Duthie and Mr John M. Martin. *Ordinary Directors*—Mr John M. Aitken; Major F. J. Carruthers; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Sir Henry Dundas, Bart.; Lord Dunglass; Mr W. S. Ferguson; Mr David Ferrie; Sir Archd. Buchan Hepburn, Bart.; Mr Hugh M. Leadbetter; Mr Peter McIntyre; Mr William Macdonald; Mr James M'Laren; Mr R. Macmillan; Mr John Marr; Mr E. Douglas Paton; Mr C. H. Scott Plummer; Mr Duncan Stewart; Sir Hugh Shaw Stewart, Bart. *Extraordinary Directors*—Mr A. H. Anderson; Mr George Constable; Mr John Edmond; Dr R. Shirra Gibb; Mr Charles Howatson; Mr John M'Caig; Mr P. B. MacIntyre; Mr W. T. Malcolm; Mr William Murray; Mr Andrew Oliver; Mr Jacob Robson. *Hon. Secretary*—Mr Alexander Cross. *Treasurer*—Mr David Wilson, D.Sc. *Chemist*—Mr J. F. Tocher, D.Sc. *Engineer*—Professor Stanfield.

The late Lord Arthur Cecil.

The CHAIRMAN referred to the death of Lord Arthur Cecil, and moved that the Directors record in the Minutes an expression of the deep regret with which they received the intimation of his death, and their sense of the valuable services rendered by him to the Society as a Director, and as a Judge at many of the Society's Shows.

The late Lieut.-Col. Menzies.

The CHAIRMAN made reference to the death of Lieut.-Col. Duncan Menzies, Rogart, who had died at the age of seventy-nine, and who was the oldest member of the Society, having been elected in 1844.

Chairman of the Board for 1913-1914.

On the motion of Sir ARCHIBALD BUCHAN HEPBURN, Bart., seconded by Mr SCOTT PLUMMER, Dr Charles Douglas of Auchlochan was unanimously elected Chairman of the Board for the ensuing year.

Dr Douglas, on taking the chair, thanked the Board for the honour conferred on him.

On the motion of Dr DOUGLAS, seconded by Dr WILSON, a cordial vote of thanks was passed to Sir Archibald Buchan Hepburn for his services to the Society as Chairman of the Board of Directors for the past two years.

Sir Archibald Buchan Hepburn acknowledged, and thanked the Directors for the loyal way in which they had supported him during his term of office.

Standing Committees.

The Standing Committees for the ensuing year were appointed, the names to be printed as usual in the Premium Book.

Representatives on other Bodies.

The following were appointed representatives of the Society on the Boards of Management of the undernoted institutions for the ensuing year—viz.: *West of Scotland Agricultural College*—John M'Caig of Belmont, Stranraer; John M. Martin, 17 Melville Street, Edinburgh. *Edinburgh and East of Scotland College of Agriculture*—David Ferrie, Parbroath, Cupar-Fife; Dr R. Shirra Gibb, Boon, Lauder. *Aberdeen and North of Scotland College of Agriculture*—William Duthie, Tarves; Captain A. T. Gordon of Newton, Inach. *Royal (Dick) Veterinary College*—John M. Martin, 17 Melville Street, Edinburgh. *Glasgow Veterinary College*—Alexander Cross of Knockdon, 19 Hope Street, Glasgow.

Milk Records Committee.

On the motion of the CHAIRMAN it was unanimously agreed to appoint Mr Alexander Cross and Sir Hugh Shaw Stewart, Bart., as the representatives of the Society on the Scottish Milk Records Committee.

Paisley Show, 1913.

Accounts.—An abstract of the Accounts of the Paisley Show was submitted, showing a probable balance of about £2000.

List of Awards.—The list of awards was laid on the table.

Vote of Thanks.—On the motion of Mr LEADBETTER a vote of thanks was accorded to Mr W. Oldfield, Dumfries, for organising and carrying through the arrangements in connection with the Concert in the Showyard at Paisley, and to Messrs Stanley Roy & Co., Edinburgh, for installing electric light in the pavilion on the occasion of the Concert.

Hawick Show, 1914.

Date of Show.—On the recommendation of the Shows Committee the date of the Hawick Show was fixed for the 14th, 15th, 16th, and 17th July 1914.

Forage.—The Secretary was instructed to advertise for tenders for the supply of forage. The following Committee was appointed to consider the tenders and report to the Board: Mr Malcolm (Convener), Mr Ferrie, Mr Scott Plummer, Mr Ferguson, Mr M'Hutchen Dobbie, Mr M'Caig, Dr Gibb, Mr Paton, and Mr Oliver.

Hotel Accommodation and Catering in Showyard.—It was remitted to the Chairman of the Board, the Chairman of the Shows Committee, the Convener of the Local Committee, and the Secretary, to make the necessary arrangements.

Police.—It was remitted to the Secretary to make the necessary arrangements for police service.

Music.—The Secretary was instructed to make the usual arrangements for music in the Showyard, and also for the Attendants' Concert in the Showyard.

Forestry Exhibition.—It was agreed that space in the Showyard for a Forestry Exhibition, and a grant of £20 towards prizes for exhibits, be granted to the Royal Scottish Arboricultural Society, on the same conditions as at the Paisley Show.

Prize List.—The SECRETARY stated that the Shows Committee had met on 4th November, and had revised the Premium List and Regulations for the Hawick Show.

It was proposed that, as usual, their report be printed and issued for consideration in detail at next Meeting of the Board.

The Board approved of this course.

Gold Challenge Cups.—On the recommendation of the Shows Committee it was agreed that at the Hawick Show the Fife and Kinross Perpetual Gold Challenge Cup be offered for Cheviot Sheep, and the Paisley Gold Challenge Cup for Border-Leicester Sheep.

A discussion followed on the recommendation of the Shows Committee that the Renfrewshire Gold Challenge Cup should be offered for Clydesdale Stallions and Colts.

Mr JOHN MARR moved the adoption of the Shows Committee's recommendation, and Mr MALCOLM seconded.

Mr PATON, seconded by Dr SHIRRA GIBB, moved as an amendment that the Cup be offered for Hunters.

Mr ALEXANDER CROSS moved as a second amendment that the Cup be offered for Half-bred Sheep, and Mr MACMILLAN seconded.

On a vote being taken as between the first and second amendments a considerable majority voted in favour of Hunters. A vote was then taken as between the amendment in favour of Hunters and the recommendation of the Shows Committee, when 18 voted for Hunters and 10 for Clydesdales.

It was therefore decided that, at the Hawick Show, the Renfrewshire Gold Cup be offered to the Hunter Classes.

Ballindalloch Challenge Cup.—A letter was read from Sir John Macpherson Grant of Ballindalloch, Bart., offering another Ballindalloch Challenge Cup, value £50, for the best Cow of any age (Heifers excluded) in the Aberdeen Angus Classes, to replace the Cup won outright at Paisley by Mr J. Ernest Kerr of Harviestoun. The offer was accepted, and a cordial vote of thanks was accorded to Sir John Macpherson Grant for the handsome gift.

Other Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors:—

1. The Clydesdale Horse Society—The Cawdor Challenge Cup for the best Clydesdale Mare or Filly, as at Paisley.

2. William Taylor Memorial Committee—William Taylor Memorial Prize of £10 and Certificate to the breeder of the best Clydesdale Filly in the yearling and two-year-old classes.

3. The Aberdeen-Angus Cattle Society—Champion Gold Medal, value £10, for best animal in the breeding classes—breeding animals shown as extra stock being eligible to compete.

4. The Shorthorn Society—Two Champion Prizes of £20 each for the best male and the best female Shorthorns, with Silver Medal to the breeders, open to all entered in, or eligible for entry in, Coates's Herd-Book.

5. The Suffolk Sheep Society—£20 in prizes as follows: Suffolk Ram Lamb, £5, £3, and £2; three Suffolk Ewe Lambs, £5, £3, and £2,—on condition that the judge of these classes is selected from list submitted by the Suffolk Sheep Society.

6. The Cheviot Sheep Society—£15 in prizes of £3, £5, and £2 for the best group of Cheviot Sheep, comprising: Tup over two shear, Shearling Tup, Ewe of any age which has reared a lamb in 1914, and Gimmer, the three latter to be bred by Exhibitor.

7. Mr J. Richmond of Kippenross—£10 in prizes for Blackface Sheep as at Paisley.

Conveyance of Stock to South Africa.

A communication was read from the Board of Agriculture for Scotland regarding the conditions under which pedigree stock intended for breeding purposes is conveyed free by the Union Castle line to ports in South Africa.

The Secretary was instructed to convey the thanks of the Board to the Board of Agriculture for Scotland for their action in the matter.

Lawes Agricultural Trust.

The Secretary read a letter from Dr E. J. Russell, Director of the Lawes Agricultural Trust, asking the Directors to appoint a representative to act on a Committee to raise £1500 towards the cost of a proposed Lawes and Gilbert Commemoration Laboratory at Rothamsted Experimental Station.

The letter was remitted to the Science Committee for consideration and report.

Report by Chemist on Deficient Samples.

The Society's Chemist submitted his Report on deficient samples of Manures and Feeding-stuffs analysed by him for Members since the Meeting of the Board in June.

National Diploma in Dairying.

Reports on the Examinations for the National Diploma in Dairying, held at Reading and Kilmarnock in the end of September, were submitted, showing that 34 candidates presented themselves at Reading, of whom 22 passed, and 36 at Kilmarnock, of whom 24 passed.

On the motion of Mr Cross, votes of thanks were accorded to the University of Leeds, and the Kilmarnock Dairy School, for the facilities granted by them for holding the examinations for the National Diploma in Agriculture and the National Diploma in Dairying.

Finance.

On the recommendation of the Finance Committee, it was agreed (1) that a donation of £5, 5s. be given to the St Andrews Ambulance Association, Glasgow, in view of services at the Paisley Show; (2) that Professor Stanfield receive an additional honorarium of £25 for extra services in connection with the Show; (3) that payments to the extent of £3, 10s. 9d. be made from the St Kilda Fund for repairs to Crab winch, and for wood required for burial purposes.

MEETING OF DIRECTORS, 3RD DECEMBER 1913.

Mr CHARLES DOUGLAS, D.Sc., of Auchlochan, in the Chair.

Present.—*Vice-President*—Mr John M. Martin. *Ordinary Directors*—Mr George Bean; Major F. J. Carruthers; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Sir Henry Dundas, Bart.; Mr W. S. Ferguson; Mr David Ferrie; Sir Archd. Buchan Hepburn, Bart.; Mr J. Ernest Kerr; Mr Hugh M. Leadbetter; Mr William Macdonald; Mr Peter McIntyre; Mr James M'Laren; Mr J. T. M'Laren; Mr R. Macmillan; Sir John Macpherson Grant, Bart.; Mr John Marr; Sir Hugh Shaw Stewart, Bart.; Mr James Wilson; Mr R. C. Young. *Extraordinary Directors*—Mr A. H. Anderson; Dr R. Shirra Gibb; Mr Charles Howatson; Mr P. B. MacIntyre; Mr W. T. Malcolm; Mr William R. Murray; Mr Andrew R. Oliver; Sir Robert Usher, Bart. *Honorary Secretary*—Mr Alexander Cross. *Treasurer*—Mr David Wilson, D.Sc. *Chemist*—Mr J. F. Tocher, D.Sc. *Engineer*—Professor Stanfield. *Zoologist*—Mr R. Stewart MacDougall, D.Sc.

The late Mr James Macdonald.

Before proceeding with the business of the Meeting, the Chairman gave expression to the sincere sorrow with which the Directors had learned of the death of their late Secretary, Mr James Macdonald. He referred to the great services which Mr Macdonald had rendered to the Society, and paid a warm tribute to his personal qualities of tact, kindness, clear vision, and ready sympathy, which gave him that power of conciliation which was largely the secret of his success. He moved that the following resolution be recorded in the Minutes, and a copy thereof sent to Mrs Macdonald.

The motion was unanimously agreed to, the Members present upstanding.

"The Directors desire to record in the Minutes an expression of the deep and sincere regret with which they received the intimation of the death of their late Secretary, Mr James Macdonald. During the period of nearly twenty years in which Mr Macdonald served the Society, his zeal, energy, and ability in the discharge of his duties were reflected in the remarkable progress made by the Society, both financially and in the strength of its membership, and also in the ever-increasing success of the Society's annual Shows. In other directions also he laboured strenuously and successfully, his efforts being constantly exerted in the promotion of the best interests of Scottish agriculture. His services as a pioneer in the cause of agricultural education are such that his name will ever be associated with the foundation of the system of Agricultural Colleges in Scotland, and the institution of the National Examinations for Diplomas in Agriculture and Dairying. It was in the interests of the Highland and Agricultural Society, however, that his labours were chiefly employed during the last twenty years of his life, and the Directors feel that they cannot too highly express their appreciation of his devoted and invaluable services to the Society, and their recognition of the marked success which attended his work. His unflinching tact and courtesy endeared him to all with whom he came in contact, and his loss is one which is keenly felt and deplored, not only by the Directors and the whole body of members of the Society, but by all interested in the agriculture of Scotland. The Directors express the deepest sympathy with his widow and family."

Minute of Board Meeting.

The Minute of Meeting of Directors held on 5th November having been printed and circulated, was held as read, and was approved.

As arising out of the Minute, Sir ARCHIBALD BUCHAN HEPBURN asked leave to add to what he had said at last Meeting of the Board, a word of recognition of the disinterested and loyal services rendered by Mr Cowie and the other members of the staff during his term of office as Chairman.

Date of Meeting of Directors and of General Meeting.

It was resolved that the next Meeting of the Board be held on Wednesday, 7th January, at One o'clock, and that the Anniversary General Meeting of the Society be held on the same date at Three o'clock.

Hawick Show, 1914.

Prize List.—The Report of the Shows Committee of 4th November, which had been printed and circulated, was again submitted, and, subject to the following emendations, was approved.

Ayrshire Cattle.—The Committee recommended the alteration of Rule 26 to read as follows: "Shorthorn, Aberdeen-Angus, Galloway, and Highland Cattle must be entered in the Herd-Books—Ayrshire Cattle in the Herd-Book or any Appendices thereto—or the exhibitor must produce evidence that his animal is eligible to be entered therein."

A letter was read from the Secretary of the Ayrshire Herd-Book Society representing that entries should be made in the Herd-Book not later than the closing date for entries for the Show.

After discussion, Dr WILSON moved that the rule be adopted as suggested by the Shows Committee. Mr MARR seconded, and this was agreed to.

Boxes for Horses.—The Committee suggested the erection of boxes of a uniform size of 10 ft. by 10 ft. for all horses except draught mares with foal at foot, and the Engineer was instructed to ascertain the difference in cost that this alteration would entail. Professor Stanfield reported that the change would cost a large sum, as the majority of the boxes at present were 8 ft. by 10 ft. He suggested that the boxes remain as before, and this was agreed to.

Shetland Cattle.—The Committee recommended that these classes be deleted.

A letter was read from the Secretary of the Shetland Cattle Society expressing regret at the reported intention of the Board to discontinue these classes.

Major CARRUTHERS moved as an amendment that the classes be retained.

Mr MACMILLAN seconded.

Mr MALCOLM moved approval of the Committee's recommendation.

Mr P. B. MACINTYRE seconded.

After Mr Ferguson and Mr Marr had spoken, Mr Malcolm, with the consent of his seconder, withdrew his motion. Major Carruthers' amendment was then agreed to, and the Classes for Shetland Cattle were accordingly retained.

Hunters.—The Committee recommended that a sum of £100 be offered in Prizes by the Society.

Mr LEADBETTER moved that a sum of £125 be allocated, and Mr CROSS seconded.

Dr WILSON moved approval of the Committee's recommendation.

On a division, 17 voted for Mr Leadbetter's amendment and 7 for approval of the Report. It was accordingly decided that £125 be offered for Hunters.

Hackneys.—The Committee recommended that £100 be offered in prizes, and that Mr J. M. Martin and Mr J. E. Kerr should suggest the classes.

Mr MARTIN moved that a sum of £120 be given, thus providing classes as at Paisley, except that Classes 74 and 75 would be combined, and Classes 79 and 80 would also be combined.

Mr KERR seconded, and the motion was agreed to.

Highland Ponies.—In accordance with the intimation made at last Meeting, the Committee recommended a schedule of prizes for one type only, as follows:—

Stallion, foaled before 1911, not exceeding 14.2 hands.

Stallion, foaled in 1911, not exceeding 14.2 hands.

Entire Colt, foaled on or after 1st January 1912.

Mare, foaled before 1911, not exceeding 14.2 hands, yeld or with Foal at foot.

Mare or Filly, foaled in 1911, not exceeding 14.2 hands.

Filly, foaled on or after 1st January 1912.

Premiums—£8, £4, and £2 in each Class, as at Paisley.

The Secretary read letters in opposition to the proposed abolition of the dual classification from Lord Middleton, Major Fraser-Tytler of Aldourie, Mr C. D. M. Ross, Ibert, and Mr J. H. Munro Mackenzie of Calgary.

The Chairman said that as the dual classification had been taken up by the Society in an experimental way, he had asked the Secretary to prepare a statement of the number of entries during the past five years, and the Board might wish to hear these figures.

The Secretary read the statement of entries as follows:—

Single Classification—Stirling, 1909, 15; Dumfries, 1910, 21.

Dual Classification—Inverness, 1911, 46; Cupar, 1912, 33; Paisley, 1913, 47.

Mr P. B. MACINTYRE moved adoption of the Committee's recommendation, and Mr FERRIS seconded.

Sir JOHN MACPHERSON GRANT, Bart., moved as an amendment that the dual classification which obtained at Paisley be continued, and this was seconded by Sir HUGH SHAW STEWART, Bart.

After discussion, on a vote being taken, 14 voted for the amendment and 10 for the recommendation of the Shows Committee. It was accordingly decided that the dual classification of Highland Ponies should remain as at Paisley.

Half-bred Lambs.—Mr LEADBETTER moved that a class for Half-bred Ewe Lambs be added, with prizes of £5, £3, and £2.

Dr SHIRRA GIBB seconded, and this was agreed to.

Oxford Down.—A suggestion to add a class for Aged Tups, with prizes of £6, £4, £2, was not adopted.

Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors:—

1. The Earl of Minto, K.G.—Champion Bronze Medals for best animal or pen in each section of live stock.

2. Board of Agriculture for Scotland—£40 towards the prizes in the classes for Highland Ponies.

3. National Pony Society—Special Prize of £15 for the best Stallion or Mare registered in the National Pony Stud-Book.

4. The Hunters' Improvement, &c., Society—Champion Gold Medal for the best Hunter Filly not exceeding three years old, registered with a number in the Hunter Stud-Book, or whose entry is tendered within a month of the award.

5. Galloway Cattle Society—Gillespie Memorial Challenge Trophy for best Galloway Animal, as at Paisley.

6. The Cheviot Sheep Society—Perpetual Challenge Cup, gifted by Mr Borthwick, value £25, for the best sheep in the Cheviot classes.

District Shows.

The following Report by the Shows Committee was submitted:—

The Committee recommended twenty-one districts for grants of £12 each; nine districts for three Silver Medals each; eleven districts for grants of £15 each for Stallions; special grants of £40 for Highland Home Industries; £20 to Kilmarnock Cheese Show; two Medals to Ross-shire Crofters' Club; £5 to Shetland Agricultural Society; £3 each to West Mainland, Rousay, and South Ronaldshay and Burray; a Gold Medal and a Silver Medal to the British Dairymaids' Association; eighteen districts for two Medals each; the usual Medals at Ploughing Competitions; and four districts for two Medals each for Cottages and Gardens; Long Service Medals and Certificates, say £90—making the total sum offered in 1914 £742, against £517 awarded in 1913.

The recommendations of the Committee were agreed to.

Argyll Naval Fund.

On the recommendation of the Argyll Naval Fund Committee Mr Edmund Montgomery Campbell Parker was appointed to the vacancy in the list of Beneficiaries.

Long Service Certificates and Medals.

The Long Service Committee recommended the award of Certificates and Medals to 163 persons. It was decided that, where possible, the certificates and medals should be distributed through the medium of the local Societies.

The Committee's recommendations were approved.

Science.

On the recommendation of the Science Committee Mr Alexander Cross of Knockdon was appointed as the Society's representative on the Lawes and Gilbert Commemoration Fund Committee.

Meetings for Nomination of Directors.

Mr JOHN M. MARTIN moved: "That a Committee be appointed to consider the propriety of holding the district meetings of members for the nomination of Directors in the various Counties within each Show district in rotation. If this arrangement be considered advantageous, the Committee will report whether it should be universal or applied only to specified districts."

Mr DAVID FERRIE seconded.

The motion was agreed to, the following being the Members of the Committee: Mr Alexander Cross, Mr David Ferrie, Mr Peter McIntyre, Sir Archibald Buchan Hepburn, Bart., Mr George Bean, Mr John M'Caig, Mr P. B. MacIntyre, Mr Scott Plummer, Dr Wilson, Dr Douglas, and Mr J. M. Martin, *Convener*.

Milk and Dairies (Scotland) Bill.

The Chairman submitted the report, of which copies had been printed and circulated, of the Conferences on the above Bill.

He said that a letter had been received that morning from the Board of Agriculture for Scotland, desiring that representatives of the Conference should meet with the Board of Agriculture and the Local Government Board to discuss the proposed amendments on the Bill. The Conference had been of a practical and harmonious character, and had continued its work with the view of making recommendations when Parliament reassembled.

Veterinary Congress, London, 1914.

On the recommendation of the Finance Committee, it was agreed to recommend to the General Meeting that a donation of £25 be given towards the organising funds of the Tenth International Veterinary Congress, to be held in London in 1914.

Finance.

On the recommendation of the Finance Committee, it was agreed that Mr Brown's salary as officer and caretaker be increased to £85 per annum, and that certain alterations on his house, and cleaning and painting, be undertaken at a probable cost of about £86.

MEETING OF DIRECTORS, 7TH JANUARY 1914.

Mr CHARLES DOUGLAS, D.Sc., of Auchlochan, in the Chair.

Present.—*Vice-Presidents*—Earl of Dalkeith; Mr William Duthie; Mr John M. Martin. *Ordinary Directors*—Mr George Bean; Mr Walter Biggar; Mr C. M. Cameron; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Sir Henry Dundas, Bart.; Lord Dunglass; Mr W. S. Ferguson; Mr David Ferrie; Mr W. Stuart Fotheringham; Captain A. T. Gordon; Mr J. Ernest Kerr; Mr Hugh M. Leadbetter; Mr William Macdonald; Mr Peter McIntyre; Mr James M'Laren; Mr J. T. M'Laren; Mr R. Macmillan; Mr John Marr; Mr E. D. Paton; Mr C. H. Scott Plummer; Sir Hugh Shaw Stewart, Bart.; Mr James Wilson; Mr R. C. Young. *Extraordinary Directors*—Mr A. H. Anderson; Mr John Edmond; Dr R. Shirra Gibb; Mr John M'Caig; Mr J. Huntly Macdonald; Mr P. B. MacIntyre; Mr W. T. Malcolm; Mr William R. Murray; Mr Andrew R. Oliver; Mr Jacob Robson; Mr M. G. Thorburn. *Honorary Secretary*—Mr Alexander Cross. *Chemist*—Mr J. F. Tocher, D.Sc. *Engineer*—Professor Stanfield. *Zoologist*—Mr R. Stewart MacDougall, D.Sc. *Auditor*—Mr Wm. Home Cook, C.A.

The late Colonel Williamson.

Before proceeding with the business of the Meeting, the Chairman referred to the death of Colonel Williamson of Lawers, who had been a Director of the Society from 1880 to 1884, and had acted as a Judge at many of the Society's Shows, and it was resolved to record in the Minutes an expression of the deep regret with which the Directors received the intimation of his death, and their sense of the valuable services rendered by him to the Society.

The late Sir William Ogilvy Dalgleish, Bart.

The Directors also resolved to record in the Minutes an expression of the deep regret with which they received the intimation of the death of Sir William Ogilvy Dalgleish of Errol Park, Bart., who had been an Extraordinary Director and a regular exhibitor at the Society's Shows, and their sense of the valuable services rendered by him to the Society.

Hawick Show, 1914.

Forage.—It was resolved to accept the offer of The Forage Supply Co., Ltd., Bonnington, Leith, to supply Forage for the Hawick Show.

Stewards.—The Stewards of the various departments were reappointed as follows: *Cattle*—Mr Kerr, Harviestoun, with Mr Anderson, Kippendavie, as Assistant Steward; *Horses*—Mr Ferguson, Pictstonhill, with Mr Leadbetter, Knowesouth, as Assistant Steward; *Sheep, Swine, &c.*—Dr Shirra Gibb, Boon; *Forage*—Mr W. T. Malcolm, Dunmore Home Farm; *Parade Stands*—Mr Ferrie, Parbroath; *Gates*—Mr M'Hutchen Dobbie, Campend; *Implements*—Mr J. T. M'Laren, Dalmeny.

Veterinary Surgeon.—On the motion of Mr SCOTT PLUMMER, seconded by Mr LEADBETTER, Mr Robert Scott, M.R.C.V.S., Hawick, was unanimously appointed Veterinary Inspector for the Hawick Show on the usual conditions, the fee being £10, 10s.

Animals "For Sale."—A letter was read from Major E. G. Fraser-Tytler of Aldourie, suggesting that, where desired by the exhibitor, the words "For Sale" should be printed in the Catalogue after any entry in the Horse and Pony sections.

On the motion of Mr M'UTCHEM DOBBIE, seconded by Sir HENRY DUNDAS, Bart., this suggestion was agreed to—no extra charge to be made for the insertion of these words.

"In Saddle" Classes.—A further suggestion by Major Fraser-Tytler, that each animal in the "In Saddle" Classes should be ridden in the ring by the Judges, was submitted.

It was agreed that this was a matter which should be left to the discretion of the Judges.

Oxford Down Classes.—A suggestion by the Secretary of the Breed Society that there should be an increase in the Oxford Down Classes was not entertained.

Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors:—

1. Board of Agriculture for Scotland—£30 in prizes of £15, £10, and £5 for Ayrshire Bulls, of any age, the progeny of Ayrshire Cows having an authenticated milk yield.

2. Ayrshire Cattle Herd-Book Society—£20, to provide two prizes of £10 each for the best Male and Female of the Ayrshire Breed, entered with a number in the Herd-Book not later than 1st January 1914.

3. Royal Caledonian Hunt—£25 towards the prizes in the Hunter Classes.

4. Mr William Elliot, Lanark—£10 in prizes of £5, £3, and £2, for the best group of Blackface Sheep, comprising: Aged ram, Shearling ram, Ewe and gimmer—the three latter to be bred by exhibitor.

Buccleuch Hunters' Society.—A letter was read from Colonel C. Hope of Cowdenknowes, asking permission to hold the Show of the Buccleuch Hunters' Breeding Society in the Showyard at Hawick.

Mr SCOTT PLUMMER moved that the request be granted, the conditions to be the same as those which obtained at Paisley with regard to the Derby Classes of the Renfrewshire Agricultural Society.

Mr CROSS seconded, and the motion was agreed to. It was left to the Secretary to arrange as to the most suitable day for the Show.

Wool Exhibit.—A letter from Principal Davis of Hawick Technical Institute, suggesting Classes for a proposed exhibit of Wool, was remitted to the Local Directors for consideration and report.

Exhibit of Primitive Sheep.—A letter from Professor Cossar Ewart, containing a proposal for an exhibit of Primitive Breeds of Sheep, was also referred to the Local Directors for consideration and report.

British Holstein Cattle.—A letter from the Secretary of the British Holstein Cattle Society was submitted, suggesting the following Classes and Prizes:—

(a) Cow in milk, born in or before 1911	£8	£4	£2
(b) Heifer, born in 1912 or 1913	6	3	2
(c) Bull, born in or before 1911	8	4	2
(d) Bull, born in 1912 or 1913	6	3	2

Of this prize-money £20 was offered by the British Holstein Cattle Society and £10 by Scottish members thereof.

The classification was adopted.

Edinburgh and East of Scotland College of Agriculture.—A letter was read from the Secretary of the Edinburgh and East of Scotland College of Agriculture applying for space for stands illustrative of the work of the College—viz., a general stand, a stand for bee appliances, and a bee tent.

The application was granted.

Implement Trials.

Mr W. S. FERGUSON moved: "That a Committee be appointed, consisting of the Stewards, the Chairman, the Secretary, and the Engineer—Mr J. T. M'Laren, Convener—with powers to carry out arrangements for a Trial of Potato Planters in spring, the expenses connected therewith not to exceed £50; and that it be remitted to the same Committee to consider and report, not later than the May Meeting, on the conditions desirable for holding a demonstration of Motor Tillage Implements in the autumn."

With regard to the trial of Potato Planters, Mr Ferguson said his idea was that it should be held in the vicinity of Edinburgh in the month of March or April. The £50 should be set aside to pay the carriage of the machines engaged in the trial, and prizes should not be awarded.

The motion was unanimously agreed to.

Dumfriesshire and Kirkcudbright Ploughing Association.

A letter was read from the Secretary of the Dumfriesshire and Kirkcudbrightshire Ploughing Association applying for a grant towards the expenses of experiments to ascertain the results on the Oat crop of ploughing with Swing and Digger Ploughs. Letters were also read from Major Carruthers and Mr J. M. Aitken in support of the application, the former, however, expressing a doubt as to whether the work was not more in the line of the Agricultural Colleges.

As no member of the Board was prepared to move in the matter, no action was taken.

Show of 1916.

Mr MARR moved: "That, provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1916 be held in the Aberdeen district."

Mr DUTHIE seconded.

The motion was unanimously agreed to.

Economic Botany Collection in Royal Scottish Museum.

A letter from the Secretary of the Scottish Horticultural Association with reference to the Economic Botany Collection in the Royal Scottish Museum was remitted to the Science Committee for consideration and report.

Long Service Certificates and Medals.

A letter from Mr Cowan, Valleyfield, Penicuik, suggesting that during the first year applications for Long Service Certificates and Medals should be received and considered every three months, was remitted to the Long Service Committee for consideration and report.

Mr Duthie suggested that the certificates and medals awarded to farm servants in Aberdeenshire should be presented at the Summer Show of the Royal Northern Agricultural Society at Aberdeen.

Dr Gibb suggested that the awards in the Border district should be presented at the Show at Hawick.

It was agreed that these suggestions should be given effect to, provided suitable arrangements could be made.

Royal Commission on Housing.

A letter was read from the Secretary of the Royal Commission on Housing asking the Society to furnish the names of representative farmers or landowners who might be asked to submit evidence to the Commission. It was agreed to nominate the following: Mr M'Hutchen Dobbie, Mr W. S. Ferguson, Mr David Ferrie, Captain A. T. Gordon, Mr John M'Caig, Mr William Macdonald, and Mr Scott Plummer.

Meetings for Nomination of Directors.

Mr PETER MCINTYRE moved that it be remitted to the Committee appointed at last Meeting to consider as to whether alterations were required in the boundaries of any of the districts, in view of changes which had taken place in the Parish boundaries, and otherwise, since the district boundaries were originally fixed.

The motion was agreed to.

Finance.

On the recommendation of the Finance Committee, it was agreed (1) that Mr Cowie's salary, as Chief Clerk, be increased to £350, and Mr Cavers' salary, as Second Clerk, to £175, both as from 1st December 1913; (2) that an application from Messrs D. Macandrew & Co., Showyard Contractors, for an increase in certain of their contract rates, to cover the greatly increased cost of timber, &c., be granted.

Judges, Hawick Show, 1914.

The Judges for the Hawick Show were appointed by the Board in Committee.

MEETING OF DIRECTORS, 4TH FEBRUARY 1914.

Mr CHARLES DOUGLAS, D.Sc., of Auchlochan, in the Chair.

Present.—*Vice-President*—Mr John M. Martin. *Ordinary Directors*—Major F. J. Carruthers; Mr John M'Hutchen Dobbie; Mr Charles Douglas, D.Sc.; Sir Henry Dundas, Bart; Lord Dunglass; Mr W. S. Ferguson; Mr David Ferrie; Sir Archd.

Buchan Hepburn, Bart.; Mr Hugh M. Leadbetter; Mr William Macdonald; Mr Peter McIntyre; Mr J. T. McLaren; Mr R. Macmillan; Mr A. B. Nicolson; Mr C. H. Scott Plummer. *Extraordinary Directors*—Mr A. H. Anderson; Mr John Edmond; Dr R. Shirra Gibb; Mr George W. Constable; Provost Melrose; Mr William R. Murray; Mr Andrew R. Oliver; Mr M. G. Thorburn. *Hon. Secretary*—Mr Alexander Cross. *Treasurer*—Mr David Wilson, D.Sc. *Chemist*—Mr J. F. Tocher, B.Sc. *Engineer*—Professor Standfield.

Minute of Board Meeting.

The Minute of Meeting of Directors, held on 7th January, having been printed and circulated, was held as read, and was approved.

Minute of General Meeting.

The Minute of General Meeting, held on 7th January, was submitted.

Hawick Show.

A Minute of Meeting of Directors in the Border District, held at Hawick on 23rd January 1914, was submitted.

The Minute recommended, *inter alia*,—

Renfrewshire Gold Cup.—That the Renfrewshire Perpetual Gold Challenge Cup be offered for the best Mare or Filly in the Hunter Classes.

Hunter Classes.—The adoption of Classes for Hunters, showing total prize money £253, of which sum £125 is contributed by the Society and £128 raised by Directors in the Border District.

Wool Exhibit.—That prizes amounting to £30 be offered for the following Classes of pure-bred wools—Blackface, Cheviot, Border Leicester, Half-bred, and Shetland. Prizes to be offered for Cross-bred wools if a sufficient sum can be raised locally.

Primitive Sheep.—That if the College of Agriculture sees fit to include the Primitive Breeds of Sheep in its Exhibit, the Society should provide the necessary space and shedding.

A discussion followed as to Rule 2 of the suggested conditions governing the Wool Exhibit, which provided as follows: "All fleeces must be white," &c. On the motion of Mr W. S. FERGUSON, seconded by Mr M. G. THORBURN, it was decided that Cheviot, Border Leicester, Half-bred and Cross-bred wools (if exhibited) be shown washed, and that Blackface and Shetland wools be shown unwashed.

Subject to this emendation the Minute was approved.

Wool Demonstration.—Mr W. R. Murray asked that the Board consider the advisability of obtaining the services of an expert to give demonstrations at the Show on the handling of wool and its preparation for the market. He moved that the matter be referred to a Committee for consideration and report, and this was agreed to. The Committee appointed was as follows: Dr Shirra Gibb, Mr R. Macmillan, Mr W. R. Murray, Mr A. R. Oliver, Mr Scott Plummer, and Mr M. G. Thorburn.

Paisley Gold Cup.—A letter was read from the Border Leicester Sheep-Breeders' Society suggesting that the Paisley Perpetual Gold Challenge Cup, which had been allocated to Border Leicester Sheep, be offered for the best group drawn from the ordinary classes, comprising Aged Ram, Shearling Ram, Ewe, and Gimmer, the three latter to be bred by the Exhibitor. This suggestion was agreed to.

Fife and Kinross Gold Cup.—On the motion of Dr SHIRRA GIBB, seconded by Mr A. R. OLIVER, it was decided to offer the Fife and Kinross Perpetual Gold Challenge Cup for a group of Cheviot Sheep comprising a Ram, a Ewe, and a Gimmer, the Ewe and Gimmer to be bred by the Exhibitor.

Hotel and Catering.—On the recommendation of the Catering Committee, it was resolved (1) that the headquarters of the Society be at the George and Abbotsford and the Abbey Hotels, Melrose; (2) that there be four Licensed Refreshment Booths and a Tea Pavilion, the Caterers in these to be—John Mitchell, Union Buildings, Aberdeen (Committee Booth); John Brodie, Cross Keys Hotel, Dalkeith; Thomas White, Ltd., 7 and 9 Gordon Street, Glasgow; John Smith & Sons, 84 Gordon Street, Glasgow. Tea Pavilion—The Border Branch of the British Women's Temperance Association (per Miss Isabella Blair, 11 Paton Street, Galashiels).

Special Prizes.—The following Special Prizes were accepted, and votes of thanks accorded to the donors:—

1. The Border Leicester Sheep Society—Two Gold Medals for best Male and best Female of the Breed exhibited in the ordinary classes. Animals entered as Extra Stock not eligible.

2. Shetland Ponies—Offer by "Four lovers of the breed," per Mr W. Mungall, Transy, of £10 in prizes of £5, £3, and £2 for Shetland Pony Mares, four years old

and upwards, entered or eligible for entry in the Shetland Pony Stud-Book, either with foal at foot or yeld, which have never won a prize; to be shown unshod, ungroomed, and in natural condition.

3. Mr R. W. R. Mackenzie, Earlsall—£10 from several members of the Shetland Pony Stud-Book Society for Ponies of any age or sex, not exceeding 42 inches in height, to be shown in saddle, and to be judged by the Hunter Judges.

4. Mr W. W. Anderson, Colzium—£10 in prizes of £5, £3, and £2 for Blackface Shearling Rams clipped bare on or after 1st April, to be inspected by two local members of the Society who shall certify that no part of the animal was clipped prior to that date.

An offer by the Teviotdale Farmers' Club of £10 to augment the prizes for Half-bred Ewe Lambs, on condition that the lambs were Leicester-Cheviots—i.e., out of a Cheviot Ewe by a Border Leicester Ram—was submitted; but in view of the fact that the Society's class for Half-bred Ewe Lambs had already been fixed without any such restriction, acceptance was delayed in order to obtain the views of the Club as to the manner in which the prizes should be awarded.

Oxford Downs.—A letter from Mr E. Hedley Smith was read, asking that a separate Judge for Oxford Down Sheep be appointed, and that another class be added.

The CHAIRMAN explained that a separate Judge for Oxford Downs had been appointed. It was agreed to take no action in the matter of increasing the Classes.

Science.

On the recommendation of the Science Committee it was resolved—(1) that the Schedule of Unit Prices of Manures and Feeding-stuffs for the current year, which had been revised, be printed and issued as usual; and (2) that Dr Fischer, of Berlin, be admitted an Honorary Foreign Associate of the Society.

Long Service Certificates and Medals.

On the recommendation of the Long Service Committee it was resolved that, up till 1st December 1914, applications be dealt with as received, and the Certificates and Medals issued with the least possible delay.

Edinburgh Show, 1915.

Mr John M. Martin, Convener of the Committee appointed to select a site for the Show of 1915, reported that, subject to some small adjustment with the Caledonian Railway Company and the Corporation of Edinburgh, the Committee had secured a very desirable site for the Edinburgh Show. The field was immediately to the south of the Caledonian Railway adjacent to Slateford Station. The size of the field was 56 acres, and the accesses were good. Slateford Station on the Caledonian line was practically on the Show-ground, and Craiglockhart Station on the North British line was close at hand. There were also tramway lines on the north and south. He mentioned briefly the various negotiations which the Committee had entered into, and stated that an excellent site had been obtained on fairly moderate terms.

The Report was unanimously approved.

Implement Trials.

On the recommendation of the Special Committee it was decided (1) that the Trial of Improved Potato Planters be postponed until the spring of 1915; and (2) that meantime regulations for that Trial, and the Trial of Motor Tillage Implements in autumn, be prepared and submitted at next Meeting.

Scottish Milk Records Association.

Mr John M'Caig was appointed a representative of the Society, in addition to two previously appointed, on the Board of the Scottish Milk Records Association.

Notice of Motion.

Mr JOHN M. MARTIN gave notice of the following motion: "That a Committee be appointed to consider the method of selection and appointment of Judges, and to recommend any improvements they may consider desirable."

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 4TH JUNE 1913.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Honorary Member.

Professor James Hendrick, B.Sc., F.I.C., University of Aberdeen, was elected an Honorary Member of the Society.

Honorary Associate.

The Hon. James Wilson, Department of Agriculture, Washington, U.S.A., was elected an Honorary Foreign Associate.

New Members.

213 candidates were balloted for and duly admitted as members.

Office-Bearers.

The following office-bearers of the Society were elected for the ensuing year:—

President—The Earl of Minto, K.G., Minto House, Hawick.

Vice-Presidents—The Earl of Dalkeith, Eildon Hall, St Boswells; Lord Binning, C.B., Mellerstain, Kelso; Mr William Duthie, Tarves, Aberdeenshire; Mr John M. Martin, 20 Grosvenor Street, Edinburgh.

Ordinary Directors—Mr Peter McIntyre, Tighnabla, Comrie; Mr Walter Biggar, Grange Farm, Dalbeattie; Mr William Macdonald, Strowan, Annfield Road, Inverness; Mr W. Steuart Fotheringham, of Fotheringham and Murthly, Murthly; Sir Hugh Shaw Stewart, Bart., of Greenock and Blackhall, Ardgowan, Greenock; Lord Dunglass, Springhill, Coldstream; Sir Henry Dundas, Bart., Polton House, Lasswade; Mr George Bean, West Balloch, Montrose.

Extraordinary Directors—Mr William T. Malcolm, Dunmore, Larbert; Mr Charles Howatson of Glenbuck, Glenbuck; Mr A. Agnew Ralston, Philipstoun House, Philipstoun; Mr J. Huntly Macdonald, Torbreck, Inverness; Mr John Edmond, Galamuir, Bannockburn; Mr James A. Hunter, Machribeg, Campeltown; Mr A. H. Anderson, Kippendavie Estate Office, Dunblane; Dr R. Shirra Gibb, Boon, Lauder; Mr John M'Craig, of Belmont, Stranraer; Mr P. B. MacIntyre, Mains of Findon, Conon Bridge.

Show District—Mr John Melrose, Provost of Hawick; Mr Frank Fenwick, North House, Hawick; Mr Jacob Robson, Byrness, Otterburn; Mr William R. Murray, Charterhouse, Kelso; Mr George W. Constable, Traquair Estate Office, Innerleithen; Mr M. G. Thorburn, of Glenormiston, Innerleithen; Mr John C. Scott, of Synton, Hawick; Mr Andrew R. Oliver, Thornwood, Hawick; Sir Robert Usher of Norton, Bart., 34 W. Nicolson Street, Edinburgh; Mr T. W. Robson Scott, Lanton Towers, Jedburgh.

Honorary Secretary—Mr Alexander Cross of Knockdon, 19 Hope Street, Glasgow.

Paisley Show, 1913.

Mr ALEXANDER CROSS of Knockdon reported that the arrangements were well advanced for the Show of this year, to be held at Paisley on Tuesday, 8th July, and

three following days. The town of Paisley had been good enough to give the use of the Racecourse as a site for the Show, and had likewise agreed to give a subscription of £250 and a supply of water free of charge. The County Councils of Argyll, Ayr, Bute, Lanark, and Renfrew had raised subscriptions in aid of the Show by means of voluntary assessments on owners of land. Provost Muir Mackean had, in view of its being the first Show of the Society to be held at Paisley, raised a fund in the district which now reaches the remarkable total of £3400. With this fund two gold cups, to be known as the Paisley Perpetual Challenge Cup and the Renfrewshire Perpetual Challenge Cup, of the value of £300 and £250 respectively, had been provided, and these will be handed over to the Society, along with sums of £600 and £500, the interest from which is to provide replicas of the cups in silver, to become the property of the winners in each year. The remainder of the fund had been utilised in providing special and additional prizes for the various classes of stock, the prize money for Hunters and Harness Horses being on an exceptionally liberal scale. A considerable sum had also been devoted to improvements in the Showyard, and generally in rendering the Show in every way attractive. In addition, three lady donors had offered two handsome silver cups and a piece of plate, valued respectively at £50, £25, and £20. The total value of the prizes offered reached the record figure of £5100. This was considerably in excess of the previous highest figure, which was £4800 on the occasion of the great Centenary Show at Edinburgh in 1884. A large extent of space had been taken for the exhibition of machines and implements, and there was every indication that the entry of stock would be on a scale seldom equalled in the history of the Society. Their Highnesses the Duke and Duchess of Teck had agreed to visit the Show on the 9th and 10th July, and it was anticipated that the attendance of the public would be unusually large.

Hawick Show, 1914.

The CHAIRMAN reported on the arrangements for the Show of 1914 to be held at Hawick. The date of the Show had not yet been fixed. The town of Hawick had provided an excellent site for the Show in Wilton Lodge Public Park, which is less than a mile from the railway station. A supply of water was to be given by the town free of charge, together with a donation of £50; and a voluntary assessment, estimated to yield a sum of £150, was to be levied in the burgh in aid of the funds of the Show. His Grace the Duke of Buccleuch had intimated a donation of £100, the West Teviotdale Agricultural Society £100, while other subscriptions had been promised amounting to a sum of about £300.

Show of 1915.

Mr J. T. M'LAREN stated that the Show of 1915 falls to be held in Edinburgh. A Committee of Directors had been appointed to consider as to a suitable site for the Show, and to report to the Board of Directors.

Agricultural Education.

Mr CROSS of Knockdon submitted the report on the examination held at Leeds in April last for the National Diploma in Agriculture. The record number of 112 candidates presented themselves—23 under the old regulations, and 89 under the new regulations introduced last year. Thirty-five candidates were from Scotland. As a result of the examination 34 diplomas were awarded—3 with honours. Of the 23 candidates who appeared under the old regulations, 17 passed and obtained the diploma—1 with honours. Of the 89 candidates who appeared under the new regulations, 6 appeared for all the subjects, and of these 2 obtained the diploma; 27 had passed certain subjects in 1912 and were completing the examination this year, and of these 15 obtained the diploma—2 with honours. The remaining 56 candidates took four subjects only, and of these 26 passed in the subjects for which they appeared, and are entitled to appear for the remaining four subjects in 1914. The first place in honours was obtained by a student of the Glasgow University and West of Scotland Agricultural College.

Finance.

Dr DAVID WILSON moved that a further grant of £100 be given to the Glasgow Veterinary College towards the cost of the Improvement Scheme of the College; and that a grant of £25 be given to the Northern Counties Joint Show, to be held at Inverness in July.

Mr A. H. ANDERSON seconded, and these grants were agreed to.

Sir HUGH SHAW STEWART acknowledged, with thanks, the grant to the Glasgow College.

Forestry Department.

The CHAIRMAN reported that the examination for first- and second-class certificates in Forestry was held from the 8th to the 10th April last, when ten candidates came forward. Three of the candidates obtained the second-class certificate, while five failed in a single subject only.

Botanical Department.

The following report by Professor M'ALPINE, Botanist to the Society, was submitted: I have the honour to report that during the season (1912-1913) I have tested the purity and germination of 255 samples of agricultural seeds. In general, the quality of the seeds is excellent, both purity and germination reaching a high standard. The accompanying table shows the maximum and minimum percentage of purity, and maximum and minimum percentage of germinating power of the grass and clover seeds tested:—

	Purity.		Germination.	
	Max. per cent.	Min. per cent.	Max. per cent.	Min. per cent.
GRASSES—				
Perennial ryegrass	99	94	96	88
Italian ryegrass	100	97	99	81
Timothy	100	91	99	90
Cocksfoot	99	97	96	56
Meadow fescue	100	98	99	95
Tall fescue	100	94	94	86
Hard fescue	100	97	90	87
Tall oat-grass	100	94	94	87
Meadow foxtail	99	96	78	58
CLOVERS—				
Red clover	100	94	100	96
Alsike clover	100	92	98	93
White clover	100	96	98	92

Chemical Department.

Mr J. F. TOCHER, B.Sc., F.I.C., Chemist to the Society, submitted his report on analyses made by him for members of the Society from the date he assumed office on 8th January to the 26th of May 1913.

The substance of his remarks is embraced in Dr Tocher's Annual Report, which appears in another part of this volume.

**GENERAL MEETING OF MEMBERS HELD IN THE SHOWYARD,
PAISLEY, 9TH JULY 1913.**

Sir THOMAS GLEN COATS, Bart., Vice-President of the Society, in the Chair.

The President.

A letter of apology was read from his Grace the Duke of Argyll, President of the Society, expressing regret at being unable to be present on account of the death of a relative.

His Highness the Duke of Teck.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Chairman of Directors, extended a hearty welcome on behalf of the Society to his Highness the Duke of Teck.

His Highness, in acknowledging the cordial welcome which he had received, spoke of the work which the Society had accomplished, and expressed the pleasure it gave him to be present and to be associated with the Society on that occasion.

The Hon. Dr James Wilson.

Sir ARCHIBALD BUCHAN HEPBURN, in calling upon the Chairman to present the Diploma of Honorary Foreign Associate of the Society to the Hon. James Wilson, LL.D., Secretary of the Department of Agriculture, Washington, U.S.A., referred to the great developments which had taken place in the Department of Agriculture in the United States during the sixteen years that Dr Wilson had occupied the position of Secretary. The Honorary Foreign Associateship, which was the highest honour in

the power of the Society to confer upon him, was bestowed in recognition of the work which he had accomplished and the resulting benefits to Agriculture throughout the world.

Dr WILSON, in acknowledging the Diploma, said he accepted the honour as a recognition of what the American people had been trying to do along the lines of Agricultural research.

Votes of Thanks.

Sir HUGH SHAW STEWART, Bart., of Ardgowan, moved—"That a cordial vote of thanks be accorded to the Provost, Magistrates, and Town Council of Paisley for their assistance and co-operation in furthering the success of the Show, for providing a suitable site for the Show and a supply of water free of cost, and for their liberal contribution towards the funds."

In speaking to the resolution Sir Hugh said that although the Provost of Paisley was with them, the Directors of the Society could not help thinking of the late Provost Muir Mackean, whose excellent work would live in the minds and recollections of the Directors.

Mr DUTHIE seconded, and the motion was unanimously agreed to.

Provost ROBERTSON suitably replied.

Mr ALEXANDER CROSS of Knockdon moved—"That cordial thanks be given to the subscribers in aid of the funds of the Show, including the Counties of Argyll, Ayr, Bute, Lanark, and Renfrew, which have subscribed by means of Voluntary Assessments; to the numerous donors of special prizes; and to the Renfrewshire Agricultural Society, which has not only refrained from holding its own Show this year, but has also promised financial support."

Mr FERGUSON, Pictstonhill, seconded, and the motion was unanimously agreed to.

Mr DAVID FERRIE, Parbroath, moved—"That a cordial vote of thanks be given to the Local Committee for all the work they have undertaken and successfully carried out in connection with the Show, and particularly to Mr Alexander Cross of Knockdon, Convener of the Committee, who has been indefatigable in his efforts to make the Show a success."

Mr SCOTT PLUMMER seconded, and the motion was unanimously agreed to.

Mr ALEXANDER CROSS acknowledged the vote of thanks.

Dr CHARLES DOUGLAS of Auchlochan moved—"That the thanks of the Meeting be conveyed to the Railway Companies for the admirable arrangements made for the conveyance of passengers, stock, and implements, and especially to the Caledonian Railway Company for providing a special siding at St James' Station, and the Glasgow and South-Western Railway Company for additional facilities provided."

Mr J. T. M'LAEN seconded, and the motion was unanimously agreed to.

Sir CHARLES BINE RENSHAW, Bart., Chairman of the Caledonian Railway Company, acknowledged the vote of thanks.

Paisley and Renfrewshire Perpetual Gold Challenge Cups.

Provost ROBERTSON handed over to the Chairman of the Board of Directors of the Society the Paisley Perpetual Gold Challenge Cup, which cost £300, and along with which there was a sum of £600 to be invested, and the annual income derived from it applied in providing a silver replica of the cup, to become the property of the winner for each year.

Sir THOMAS GLEN COATS, Bart., similarly handed over the Renfrewshire Perpetual Gold Challenge Cup, which cost £250, and along with which there was a replica fund of £500.

Sir ARCHIBALD BUCHAN HEPBURN, in accepting the Cups on behalf of the Society, paid a high tribute to the memory of the late Provost Muir Mackean, by whose efforts not only had these valuable cups been provided, but so much had been done to ensure the success of the Show.

Election of Extraordinary Directors.

The following motion standing in the name of Colonel CHARLES M'INROY, C.B., was postponed: "To call attention to the selection of Extraordinary Directors for 1913-14, as carried out in June 1913, and to move—"That in Bye-laws Nos. 5 and 10 the word "June," wherever it occurs, be struck out, and the words "the Show-yard" be substituted therefor."

Sir ARCHIBALD BUCHAN HEPBURN explained that the Directors had asked Colonel M'Inroy if he could see his way to postpone the motion to a future occasion when there would be more time to discuss it, and Colonel M'Inroy had kindly agreed to do so.

A vote of thanks to Sir Thomas Glen Coats, Bart., for presiding, terminated the proceedings.

ANNIVERSARY GENERAL MEETING, 7TH JANUARY 1914.

The EARL OF DALKEITH, Vice-President, in the Chair.

New Members.

151 candidates were balloted for and duly admitted as members of the Society.

Finance.

Mr ALEX. CROSS, in the unavoidable absence of Dr Wilson, Treasurer, submitted the accounts of the Society for the year to 30th November 1913. The receipts for the year from all sources reached a total of £20,038, 4s. 7d. This sum exceeded the outlays by £4428, 12s. 11d., including a profit of £2435, 9s. 6d. on the Paisley Show, and life subscriptions to the amount of £685, 7s. The local subscriptions in aid of the Paisley Show amounted to £1244, 13s. 2d. In the past year the expenditure on educational work amounted to about £219, on dairy work £97, and on work in the chemical and botanical departments about £213.

Argyll Naval Fund.

Mr JOHN M. MARTIN submitted the report on the Argyll Naval Fund for 1912-13, which showed that the income for the year amounted to £244, 14s. 10d., while the expenditure was £180, in grants to five naval cadets.

Paisley Show, 1913.

Mr ALEXANDER CROSS reported on the Paisley Show of 1913. The show of live stock was large and of a very high character, and the display of implements and machines was comprehensive and in every way creditable. The amount drawn in entry fees for stock and implements constituted a record in the history of the Society's Shows. The attendance of the public was unusually large, being only surpassed by the great Shows held in Edinburgh. The presence of their Highnesses the Duke and Duchess of Teck doubtless contributed to this gratifying result. The accounts showed a credit balance of about £2435. The local fund reached the total of £1244, 13s. 2d.—£72, 3s. 10d. by the County of Argyll, £123, 12s. 9d. by Ayrshire, £75 by Buteshire, £376, 8s. by Lanarkshire, £247, 8s. 7d. by Renfrewshire, £250 and free site and water supply by the town of Paisley, and a donation of £100 by the Renfrewshire Agricultural Society.

In addition, the late Provost Muir Mackean of Paisley collected a sum of about £3400, which was allocated as follows: In providing two Perpetual Gold Challenge Cups to be called the Paisley and the Renfrewshire Cups, with funds to provide a replica of each, to become the property of the winner, £1700; special and additional prizes, £750; advertising and Showyard improvements, £550. This left a balance of about £400, which was handed over to the Society by the late Provost Muir Mackean's executors. It was hardly necessary to state that the efforts of the late Provost Muir Mackean did more to secure the success of the Show than those of any other individual, and his lamented death on the eve of the Show was the one event which cast a shadow of regret over the proceedings.

Mr CROSS moved, in view of the fact that a sum of over £400, which had not been allocated by the late Provost Muir Mackean before his death, had been handed over to the Society by his Executors, that a donation of £100 be given to the Royal Scottish Agricultural Benevolent Association, and a sum of £300 to the Renfrewshire Agricultural Society, in recognition of the services and in accordance with the wishes of the late Provost Muir Mackean.

Sir HUGH SHAW STEWART, Bart., seconded, and these donations were agreed to.

Hawick Show, 1914.

Mr SCOTT PLUMMER reported that the arrangements were well advanced for the Show of this year, to be held at Hawick on Tuesday, 14th July, and three following days. The town of Hawick had provided an excellent site for the Show in the Wilton Lodge Public Park, which is less than a mile from the railway station. A supply of water was to be given by the town free of charge, together with a donation of £50; and a voluntary assessment, estimated to yield a sum of £150, is to be levied in the burgh in aid of the funds of the Show. His Grace the Duke of Buccleuch had intimated a donation of £100, the West Teviotdale Agricultural Society £100, while other subscriptions had been promised amounting to a sum of about £300. The Premium List for the Show would be liberal, the prize money from the Society's own funds reaching a total of about £2620, an increase of more than £120 over the sum offered at the Peebles Show of 1906. There was every reason to expect that the Show would be cordially supported by the people of the Border counties.

Edinburgh Show, 1915.

Mr JOHN M. MARTIN reported that the Board of Directors were negotiating for a site for the Edinburgh Show of 1915, but these negotiations were not yet sufficiently advanced to permit of a statement being made on the subject.

Show of 1916.

Mr JOHN MARR moved that, provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1916 be held in the Aberdeen district.

Mr WM. DUTHIE seconded, and the motion was agreed to.

District Shows and Competitions.

Mr JOHN MARR submitted the report on the District Shows and Competitions, showing that in 1913 grants of money and medals had been given in 296 districts. The total expenditure under this head amounted to £517. For the current year the Directors proposed the following grants: (1) Under section 1, twenty-one districts for grants of £12 each for cattle, horses, and sheep; and nine districts in intermediate competition with a grant of three silver medals to each. (2) Under section 2, eleven districts for grants of £15 each for stallions; special grants of £40 to the Highland Home Industries; £20 to Kilmarnock Cheese Show; two silver medals to Ross-shire Crofters' Club; £5 to Shetland; £3 each to West Mainland, Rousay, and South Ronaldshay and Burray; a gold medal and a silver medal to the British Dairymaids' Association; eighteen districts for two medals each; about two hundred medals at ploughing competitions; two medals each to four districts for cottages and gardens; long service medals and certificates, say £90—making the total sum offered in 1914, £742.

Mr W. T. MALCOLM seconded, and the report was approved.

Chemical Department.

Dr J. F. TOCHER, Consulting Chemist to the Society, reported as follows on the work of his department during 1913:—

The number of samples submitted for analysis since I assumed office on January 8th up to December 31st was 117. The following table shows the number and nature of the samples analysed during the last six years:—

	1913.	1912.	1911.	1910.	1909.	1908.
Fertilisers . .	46	53	68	61	97	68
Feeding-stuffs . .	25	23	23	30	26	28
Waters . .	27	15	17	26	16	29
Miscellaneous . .	19	21	18	29	20	10
Total . .	117	122	136	146	159	135

This corresponds to an average of 136 samples annually, during the past six years. The number of fertilisers examined during the past two years has been somewhat less than the numbers examined during former years.

The substance of Dr Tocher's Report appears in another part of this volume.

Veterinary Congress.

Dr SHIRRA GIBB moved that a donation of £25 be given towards the Organising Fund of the Tenth International Veterinary Congress to be held in London in July this year.

Mr SCOTT PLUMMER seconded, and this was agreed to.

Education.

Mr ALEX. CROSS reported on the results of the examination held last autumn for the National Diploma in Dairying. At the examination in England there were thirty-four candidates, of whom twenty-two obtained the diploma and twelve failed; at the examination at Kilmarnock there were thirty-six candidates, twenty-four getting the diploma and twelve failing. The names of the successful candidates, as well as the names of the winners of the National Diploma in Agriculture at the examination held last May, will be published in next volume of 'Transactions.'

Publications.

Mr C. M. DOUGLAS reported that the annual volume of the 'Transactions' was being prepared, and would be published in spring.

PREMIUMS

OFFERED BY

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND IN 1914

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GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to **THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND**.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.
3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture; and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.
4. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements with the Royal College of Veterinary Surgeons.
5. The institution of a National Examination in Dairying, jointly with the Royal Agricultural Society of England.
6. The institution of an Examination in Forestry for First and Second Class Certificates.
7. The appointment of a chemist for the purpose of promoting the application of science to agriculture.
8. The establishment of a Botanical Department.
9. The appointment of Entomologist to advise members regarding insect pests.
10. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
11. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of **THE HIGHLAND AND AGRICULTURAL SOCIETY** is conducted under the sanction and control of the Royal Charters, referred to above which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members—Nine nominated by the Charter, and Seven elected by the Society.

PRIVILEGES OF MEMBERS

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.¹*
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors, &c., &c.*

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follow :—

The estimation of one ingredient in a manure or feeding-stuff	: : : 5s.
The estimation of two or more ingredients in a manure or feeding-stuff	: : : 10s.

These charges apply only to analyses made for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

The Society's Chemist, if requested, also supplies valuations of manures, according to the Society's scale of units.

SEEDS, CROP DISEASES, INSECT PESTS, &c.

The rates of charges for the examination of plants and seeds, crop diseases, insect pests, &c., will be had on application to the Secretary.

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 8s.² Subscriptions are payable on election, and afterwards annually in January.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list).

JOHN STIRTON, *Secretary.*

3 GEORGE IV. BRIDGE, EDINBURGH.

¹ Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

² Candidates claiming to be on the 10s. list must state under which of the above designations they are entitled to be placed on it.

ESTABLISHMENT FOR 1913-1914

President.

THE EARL OF DALKEITH, Eildon Hall, St Boswells.

Vice-Presidents.

LORD BINNING, C.B., Mellerstain, Kelso.

WILLIAM DUTHIE, Tarves, Aberdeenshire.

JOHN M. MARTIN, 20 Grosvenor Street, Edinburgh.

Ordinary Directors.

Year of
election.

1910	E. DOUGLAS PATON, Braehead, St Boswells.
	J. T. M'LAREN, The Leuchold, Dalmeny Park, Edinburgh.
	Captain ALEX. T. GORDON of Newton, Inch, Aberdeenshire.
	J. ERNEST KEER, Harviestoun Castle, Dollar.
	Major F. J. CARRUTHERS of Dormont, Lockerbie.
	J. DOUGLAS FLETCHER of Rosehaugh, Avoch, R.S.O., Ross-shire.
	DAVID FERRIE, Parbroath, Cupar-Fife.
1911	JAMES WILSON, Westburn, Cambuslang.
	Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
	JOHN MARR, Upper Mill, Tarves.
	JAMES M'LAREN, Alton, Stirling.
	JOHN M. AITKEN, Norwood, Lockerbie.
	C. M. CAMERON, Balnakyle, Munlochy, Ross-shire.
	Captain JOHN GILMOUR, M.P., yr. of Montrave, Pollok Castle, Newton Mearns.
1912	CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow.
	C. H. SCOTT PLUMMER of Sunderland Hall, Selkirk.
	ARTHUR B. NICOLSON of Glenbervie, Fordoun.
	DUNCAN STEWART of Millhills, Crieff.
	ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
	Sir JOHN MACPHERSON-GRANT of Ballindalloch, Bart.
	W. S. FERGUSON, Pictstonhill, Perth.
1913	ROBERT C. YOUNG of Shoddesden, Netherfield, Johnstone.
	HUGH M. LEADBETTER, Knowesouth, Jedburgh.
	JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
	PETER M'INTYRE, Tighnablaire, Comrie.
	WALTER BIGGAR, Grange Farm, Dalbeattie.
	WILLIAM MACDONALD, Strowan, Annfield Road, Inverness.
	W. STEWART FOTHERINGHAM, of Fotheringham and Murthly, Murthly.
1913	Sir HUGH SHAW STEWART, Bart., of Greenock and Blackhall, Ardgowan, Greenock.
	LORD DUNGLASS, Springhill, Coldstream.
	Sir HENRY DUNDAS, Bart., Polton House, Lasswade.
	GEORGE BEAN, West Balloch, Montrose.

Extraordinary Directors.

- 1905 WILLIAM T. MALCOLM, Dunmore, Larbert.
 1911 { CHARLES HOWATSON of Glenbuck, Glenbuck.
 A. AGNEW RALSTON, Philipstoun House, Philipstoun.
 J. HUNTLY MACDONALD, Torbreck, Inverness.
 1912 { JOHN EDMOND, Galamuir, Bannockburn.
 JAMES A. HUNTER, Machrieg, Campbeltown.
 A. H. ANDERSON, Kippendavie Estate Office, Dunblane.
 1913 { Dr R. SHIRRA GIBB, Boon, Lauder.
 JOHN M'CAIG of Belmont, Stranraer.
 P. B. MACINTYRE, Mains of Findon, Conon Bridge.

Show District.

- 1913 { JOHN MELROSE, Provost of Hawick.
 FRANK FENWICK, North House, Hawick.
 JACOB ROBSON, Byrness, Otterburn.
 WILLIAM R. MURRAY, Charterhouse, Kelso.
 GEORGE W. CONSTABLE, Traquair Estate Office, Innerleithen.
 M. G. THORBURN, of Glenormiston, Innerleithen.
 JOHN C. SCOTT of Synton, Hawick.
 ANDREW R. OLIVER, Thornwood, Hawick.
 Sir ROBERT USHER of Norton, Bart., 34 W. Nicolson Street,
 Edinburgh.
 T. W. ROBSON SCOTT, Lanton Towers, Jedburgh.

Office-Staff.

- DAVID WILSON, D.Sc., of Carbeth, Killearn, *Treasurer*.
 ALEX. CROSS of Knockdon, 19 Hope Street, Glasgow, *Honorary Secretary*.
 Rev. A. WALLACE WILLIAMSON, D.D., 44 Palmerston Place, *Chaplain*.
 JOHN STIRTON, *Secretary*.
 EDWARD M. COWIE, *Chief Clerk and Cashier*.
 A. S. CAVERS, *Second Clerk*.
 WILLIAM HOME COOK, O.A., 42 Castle Street, *Auditor*.
 J. F. TOCHER, D.Sc., F.I.C., 41½ Union Street, Aberdeen, *Chemist*.
 Professor R. STANFIELD, A.R.S.M., M.Inst.C.E., F.R.S.E., 24 Mayfield
 Gardens, Edinburgh, *Consulting Engineer*.
 A. N. M'ALPINE, 6 Blythswood Square, Glasgow, *Consulting Botanist*.
 R. S. MACDOUGALL, M.A.; D.Sc., 9 Dryden Place, *Consulting Entomologist*.
 TODS, MURRAY, & JAMIESON, W.S., 66 Queen Street, *Law Agents*.
 WILLIAM BLACKWOOD & SONS, 45 George Street, *Publishers*.
 HENRY MUNRO, Limited, 52 North Bridge, Edinburgh, and 82 Mitchell-
 Street, Glasgow, *Advertising Agents*.
 HAMILTON & INCHES, Princes Street, *Silversmiths*.
 ALEXANDER KIRKWOOD & SON, 9 St James' Square, *Medallists*.
 D. MACANDREW & Co., 120 Loch Street, Aberdeen, *Showyard Contractors*.
 ANDREW BROWN, *Messenger*.

Chairman of Board of Directors.

CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow.

Chairmen of Committees.

- | | |
|--------------------------------------|---|
| 1. <i>Argyll Naval Fund</i> | Captain JOHN GILMOUR, M.P. |
| 2. <i>Finance, Chambers, and Law</i> | DAVID WILSON, D.Sc., of Carbeth. |
| 3. <i>Publications</i> | CHARLES DOUGLAS, D.Sc., of Auchlochan. |
| 4. <i>Shows</i> | C. H. SCOTT PLUMMER of Sunderland Hall. |
| 5. <i>Science</i> | DAVID WILSON, D.Sc., of Carbeth. |
| 6. <i>General Purposes</i> | CHARLES DOUGLAS, D.Sc., of Auchlochan. |
| 7. <i>Education</i> | ALEXANDER CROSS of Knockdon. |
| 8. <i>Forestry</i> | Sir ARCHIBALD BUCHAN HEPBURN, Bart. |

COMMITTEES FOR 1913-1914

1. ARGYLL NAVAL FUND.

Captain JOHN GILMOUR, M.P., yr. of Montrave, Pollok Castle, Newton
Mearns, *Convener*.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
Sir J. PATTEN MACDOUGALL, K.C.B., 39 Heriot Row, Edinburgh.
Sir KENNETH MACKENZIE of Gairloch, Bart., 10 Moray Place, Edinburgh.
JOHN MACLACHLAN of MacLachlan, Castle Lachlan, Strachur.
ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow.
DAVID WILSON, D.Sc., of Carbeth, Killearn.

2. FINANCE, CHAMBERS, AND LAW.

DAVID WILSON, D.Sc., of Carbeth, Killearn, *Convener*.
ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow, *Vice-Convener*.
JAS. I. DAVIDSON, Saughton Mains, Corstorphine.
JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
W. S. FERGUSON, Pictstonhill, Perth.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
JOHN M'CAIG of Belmont, Stranraer.
J. T. M'LAREN, The Leuchold, Dalmeny Park, Edinburgh.
JOHN M. MARTIN, 20 Grosvenor Street, Edinburgh.
C. H. SCOTT PLUMMER of Sunderland Hall, Selkirk.
CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow, Chairman,
ex officio.
WILLIAM HOME COOK, C.A., Auditor, *ex officio*.

3. PUBLICATIONS.

CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow, *Convener*.
JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
DAVID FERRIE, Parbroath, Cupar.
Dr R. SHIRRA GIBB, Boon, Lauder.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
ARTHUR B. NICOLSON of Glenbervie, Fordoun.
DAVID WILSON, D.Sc., of Carbeth, Killearn.
ALEX. CROSS of Knockdon, Hon. Secretary, *ex officio*.

4. SHOWS.

C. H. SCOTT PLUMMER of Sunderland Hall, *Convener*.
JOHN M. MARTIN, 20 Grosvenor Street, Edinburgh, *Vice-Convener*.
A. H. ANDERSON, Kippendavie, Dunblane.
GEORGE BEAN, West Ballochy, Montrose.
WALTER BIGGAR, Grange Farm, Dalbeattie.
C. M. CAMERON, Balnakyle, Munlochy.
Major F. J. CARRUTHERS of Dormont, Lockerbie.
JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
Sir HENRY DUNDAS, Bart., Polton House, Lasswade.
LORD DUNGLASS, Springhill, Coldstream.
WILLIAM DUTHIE, Tarves, Aberdeenshire.

W. S. FERGUSON, Pictstonhill, Perth.
 DAVID FERRIE, Parbroath, Cupar-Fife.
 J. D. FLETCHER of Rosehaugh, Avoch, R.S.O., Ross-shire.
 Captain JOHN GILMOUR, M.P., yr. of Montrave, Pollok Castle, Newton
 Mearns.
 Captain ALEXR. T. GORDON of Newton, Inach, Aberdeenshire.
 Sir ARCHIBALD BUCHAN HEPBURN, of Smeaton, Bart., Prestonkirk.
 J. ERNEST KERR, Harviestoun Castle, Dollar.
 H. M. LEADBETTER, Knowesouth, Jedburgh.
 JOHN M'CAIG of Belmont, Stranraer.
 J. HUNTLY MACDONALD, Torbreck, Inverness.
 PETER M'INTYRE, Tighnabhair, Comrie.
 P. B. MACINTYRE, Mains of Findon, Conon Bridge.
 JAMES M'LAREN, Alton, Stirling.
 J. T. M'LAREN, The Leuchold, Dalmeny Park.
 ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
 Sir JOHN MACPHERSON-GRANT of Ballindalloch, Bart.
 W. T. MALCOLM, Dunmore, Larbert.
 JOHN MARR, Upper Mill, Tarves.
 JOHN MELROSE, Provost of Hawick.
 WILLIAM R. MURRAY, Charterhouse, Kelso.
 ANDREW R. OLIVER, Thornwood, Hawick.
 E. DOUGLAS PATON, Braehead, St Boswells.
 JACOB ROBSON, Byrness, Otterburn.
 DUNCAN STEWART of Millhills, Crieff.
 Sir HUGH SHAW STEWART of Greenock and Blackhall, Bart., Ardgowan.
 JAMES WILSON, Westburn, Cambuslang.
 DAVID WILSON, D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
 ALEX. CROSS of Knockdon, Hon. Secretary, *ex officio*.
 CHARLES DOUGLAS, D.Sc. of Auchlochan, Lesmahagow, Chairman, *ex officio*.
 Professor R. STANFIELD, 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

5. SCIENCE.

DAVID WILSON, D.Sc., of Carbeth, Killearn, *Convener*.
 Dr R. SHIRRA GIBB, Boon, Lauder, *Vice-Convener*.
 J. M. AITKEN, Norwood, Lockerbie.
 JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
 CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow.
 JOHN EDMOND, Gallamuir, Bannockburn.
 W. S. FERGUSON, Pictstonhill, Perth.
 DAVID FERRIE, Parbroath, Cupar-Fife.
 W. STEUART FOTHERINGHAM, of Fotheringham and Murthly, Murthly.
 Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
 JOHN M'CAIG of Belmont, Stranraer.
 J. T. M'LAREN, The Leuchold, Dalmeny Park.
 JOHN M. MARTIN, 20 Grosvenor Street, Edinburgh.
 ARTHUR B. NICOLSON of Glenbervie, Fordoun.
 C. H. SCOTT PLUMMER of Sunderland Hall, Selkirk.
 JAMES WILSON, Westburn, Cambuslang.
 JOHN WILSON, Chapelhill, 6 Mansionhouse Road, Edinburgh.
 ROBERT C. YOUNG, of Shoddesden, Netherfield, Johnstone.
 ALEX. CROSS of Knockdon, Hon. Secretary, *ex officio*.
 J. F. TOOHER, Chemist, *ex officio*.
 A. N. M'ALPINE, Botanist, *ex officio*.
 R. S. MACDOUGALL, D.Sc., Zoologist, *ex officio*.

6. GENERAL PURPOSES.

CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow, *Convener*.
 JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
 Sir HENRY DUNDAS, Bart., Polton House, Lasswade.

Dr R. SHIRRA GIBB, Boon, Lauder.
 Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
 JOHN M'CAIG, of Belmont, Stranraer.
 J. T. M'LAREN, The Leuchold, Dalmeny Park.
 ROBERT MACMILLAN, of Holm and Dalquhairn, Woodlea, Moniaive.
 Sir HUGH SHAW STEWART, Bart., of Greenock and Blackhall, Ardgowan.
 DAVID WILSON, D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
 ALEX. CROSS of Knockdon, Hon. Secretary, *ex officio*.

7. EDUCATION.

ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow, *Convener*.
 Dr R. SHIRRA GIBB, Boon, Lauder.
 CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow.
 Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
 DAVID WILSON, D.Sc., of Carbeth, Killearn.
 JOHN STIRTON, *Secretary*.

8. FORESTRY.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk, *Convener*.
 A. H. ANDERSON, Kippendavie, Dunblane.
 CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow.
 The Right Hon. R. C. MUNRO FERGUSON of Raith, M.P., Kirkcaldy.
 Captain JOHN GILMOUR, M.P., yr. of Montrave, Pollok Castle, Newton
 Mearns.
 DAVID KEIR, Ladywell, Dunkeld.
 Lord LOVAT, C.B., K.C.V.O., A.D.C., Beaufort Castle, Beaulieu.
 Sir JOHN MACPHERSON-GRANT of Ballindalloch, Bart.
 Right Hon. Sir HERBERT E. MAXWELL of Monreith, Bart., Whauphill.
 Sir JOHN STIRLING MAXWELL of Pollok, Bart., Pollokshaws.
 JOHN MICHIE, M.V.O., Balmoral, Ballater.
 The MASTER OF POLWARTH, Humble House, Upper Keith.
 EARL OF STAIR, Lochinch, Castle Kennedy Station.
 Captain STIRLING of Keir, Dunblane.
 DAVID WILSON, D.Sc., of Carbeth, Killearn.

9. OFFICE-BEARERS.

Constitution: (1) The four Ordinary Directors for the district in which the Show for the year is to be held; (2) one Ordinary Director from each of the other Show districts; and (3) the Chairman of the Board, Hon. Secretary, and Treasurer, *ex officio*.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart.,
 JOHN M'HUTCHEN DOBBIE, Campend, Dalkeith.
 J. T. M'LAREN, The Leuchold, Dalmeny.
 Sir HENRY DUNDAS, Bart., Polton House, Lasswade.
 W. S. FERGUSON, Pictstonhill, Perth.
 Sir JOHN MACPHERSON-GRANT of Ballindalloch, Bart.
 HUGH M. LEADBETTER, Knowesouth, Jedburgh.
 JOHN MARR, Upper Mill, Tarves.
 JAMES M'LAREN, Alton, Stirling.
 Sir HUGH SHAW STEWART, Bart., of Greenock and Blackhall.
 ROBERT MACMILLAN, Woodlea, Moniaive.
 CHARLES DOUGLAS, D.Sc., of Auchlochan, Chairman, *ex officio*.
 ALEX. CROSS of Knockdon, Hon. Secretary, *ex officio*.
 Dr D. WILSON of Carbeth, Killearn, Treasurer, *ex officio*.

The President, Vice-Presidents, the Treasurer, Honorary Secretary, and Chairman of Directors are members *ex officio* of all Committees.

REPRESENTATIVES ON OTHER BODIES.**National Agricultural Examination Board.**

ALEX. CROSS of Knockdon, 19 Hope Street, Glasgow, Chairman.
 CHARLES DOUGLAS, D.Sc., of Auchlochan, Lesmahagow.
 Dr R. SHIRRA GIBB, Boon, Lauder.
 Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Prestonkirk.
 DAVID WILSON, D.Sc., of Carbeth, Killearn.
 JOHN STIRTON, Highland and Agricultural Society.

Edinburgh and East of Scotland College of Agriculture.

D. FERRIE, Parbroath, Cupar-Fife.
 Dr R. SHIRRA GIBB, Boon, Lauder.

West of Scotland Agricultural College.

JOHN M'CAIG of Belmont, Stranraer.
 JOHN M. MARTIN, 20 Grosvenor Street, Edinburgh.

Aberdeen and North of Scotland College of Agriculture.

WILLIAM DUTHIE, Tarves.
 Captain A. T. GORDON, of Newton, Inch.

Royal (Dick) Veterinary College.

JOHN M. MARTIN, 20 Grosvenor Street, Edinburgh.

Glasgow Veterinary College.

ALEX. CROSS of Knockdon, 19 Hope Street, Glasgow.

Scottish Milk Records Committee.

ALEX. CROSS of Knockdon, 19 Hope Street, Glasgow.
 JOHN M'CAIG of Belmont, Stranraer.
 Sir HUGH SHAW STEWART, Bart., of Greenock and Blackhall.

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, in the Society's Hall, 3 George IV. Bridge, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. This year it will be held at Hawick, on Wednesday, 15th July, at an hour to be announced in the programme of the Show.

With reference to motions at General Meetings, Bye-Law No. 10 provides—"That at General Meetings of the Society no motion or proposal

(except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

General Show at Hawick.—14th, 15th, 16th, and 17th July.—Entries close for Implements, 11th May; Stock, Poultry, and Dairy Produce, 5th June.

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November till June inclusive, at half-past one o'clock P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Districts on the Board for the year 1915-1916, will be held at the places and on the days after mentioned:—

- | | |
|--|---------------------------------|
| 1. Edinburgh, Market Buildings, Gorgie, | Wed., 27th Jan. 1915, at 2. |
| 2. Glasgow, North British Railway Hotel, | Wed., 10th Feb. 1915, at 1. |
| 3. Stirling, Golden Lion Hotel, | Thur., 11th Feb. 1915, at 1.30. |
| 4. Perth, Salutation Hotel, | Fri., 12th Feb. 1915, at 2. |
| 5. Kelso, Anteroom, Corn Exchange, | Fri., 19th Feb. 1915, at 1. |
| 6. Aberdeen, Imperial Hotel, | Fri., 26th Feb. 1915, at 2.30. |
| 7. Inverness, Station Hotel, | Tues., 2nd Mar. 1915, at 12.30. |
| 8. Dumfries, King's Arms Hotel, | Wed., 10th Mar. 1915, at 1. |

The nomination of Proprietor or other Members paying the higher subscription must be made in the 1st, 2nd, 4th, and 5th Districts; and the nomination of Tenant-Farmer or other Members paying the lower subscription, in the 3rd, 6th, 7th, and 8th Districts.

Retiring Directors are not eligible for re-election until after the lapse of at least one year.

EXAMINATIONS.

Agriculture.—The Examination for 1914 for the National Diploma in Agriculture will be held at the University, Leeds, on Saturday, 18th April, and following days. Entries close on 28th February.

Dairy.—The Examination for 1914 for the National Diploma in Dairy-ing will be held at the Dairy School, Kilmarnock, on Saturday, 19th September, and following days. Entries close on 15th August.

Forestry.—The Examination for the Society's Certificates in Forestry will be held at 3 George IV. Bridge, Edinburgh, in the month of April 1915.

AGRICULTURAL EDUCATION

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1872 the Free Life Membership of the Society was granted to winners of the Diploma. In 1884 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a NATIONAL DIPLOMA IN AGRICULTURE (N.D.A.) This Examination is now conducted under the management of the "National Agricultural Examination Board" appointed by the two Societies. In the year 1903, on the invitation of the two Societies, the Board of Agriculture and the Scotch Education Department agreed to appoint a representative from each to act on the Examination Board. Professor Middleton represents the former and Sir John Struthers, K.C.B., LL.D., the latter body.

NEW REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

REGULATIONS.

1. The Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral Examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a Candidate must—

(a) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany, Geology, General Chemistry, Physics and Mechanics*, as attested by class and other examinations are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination; or

(b) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University; or

(c) Present a Senior Certificate obtained at the Local Examinations of the Universities of Oxford or Cambridge, and produce evidence that he has continued his study of science for at least a year, and has

obtained a certificate in subject 3 (a) Elementary Chemistry and Physics, (b) Botany of Group H of the Oxford Higher Local Examination, or in Subjects 1, Elementary Chemistry and Physics, and 4, Botany of Group E of the Cambridge Higher Local Examination; or

(d) Present an Intermediate Leaving Certificate of the Scotch Education Department, and produce evidence that he has continued his studies for at least another year and has obtained the Higher Leaving Certificate in Science (including Chemistry and Botany).

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment.

6. Candidates will have the option of taking the whole of the following eight papers at one time, or of sitting for a group of any three or four in one year and the remaining group of four or five in the next year.

SUBJECT.	Maximum Marks.	Pass Marks.
1. Practical Agriculture (First Paper) . . .	300	180
2. Practical Agriculture (Second Paper) . . .	300	180
3. Farm and Estate Engineering—		
(a) Surveying	300	150
(b) Farm Buildings		
(c) Machinery and Implements		
4. Agricultural Chemistry	300	150
5. Agricultural Botany	300	150
6. Agricultural Book-keeping	200	100
7. Agricultural Zoology	200	100
8. Veterinary Science	200	100
	<u>2100</u>	<u>1110</u>

7. A Candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (450) of the maximum marks (600) in the two Practical Agriculture papers.

8. Candidates electing to take the entire Examination at one time and failing in not more than two subjects may appear for these subjects in the following year. Failure in more than two subjects will be regarded as failure in the whole Examination.

9. Candidates electing to take the Examination papers in two groups and failing in a single subject may appear for that subject in the following year. Failure in more than one subject will be regarded as failure in the group.

10. Non-returnable fees must be paid by Candidates as follows:—
- | | |
|---|-----------------------------|
| Entire Examination | Two guineas. ¹ |
| Group of three or four Subjects | One guinea. ¹ |
| One or two Subjects | Ten shillings. ¹ |

¹ After the Examination of 1914, the Entry Fees will be raised to four guineas, two guineas, and one pound respectively.

11. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular Candidate to the Examination.

The Examination will take place at the Leeds University on SATURDAY, APRIL 18, 1914, and days of the following week.

Forms of application for permission to sit at the Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.," or from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned duly filled up not later than SATURDAY, FEBRUARY 28, 1914, when the Entries will close.

16 BEDFORD SQUARE, LONDON, W.C.,
December 1913.

SYLLABUS OF SUBJECTS OF EXAMINATION

PRACTICAL AGRICULTURE.

I.—FIRST PAPER.

1. *British Farming*.—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. *Climate*.—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. *Soils*.—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation—Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. *Manures*.—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre—Unexhausted value of manures and feeding-stuffs.

5. *Crops*.—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming.

II.—SECOND PAPER.

6. *Live Stock*.—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating—Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs and poultry—Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crop, Produce, and Stock.*—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk.*—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital.*—Calculations of the stocking and working of arable, stock, and dairy farms—Labour on the farm—Farm valuations—Rent and taxes.

10. *Renting a Farm.*—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a Candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm routine.*

III.—FARM AND ESTATE ENGINEERING.

SURVEYING.

1. The use and adjustment of instruments employed in Surveying and Levelling.

2. Land surveying by chain—Plotting from field book, and determination of areas surveyed—The simpler "field problems."

3. Levelling and plotting from field book.

4. A sufficient knowledge of Trigonometrical Surveying for the determination of heights and distances by Theodolite.

5. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

FARM BUILDINGS.

6. *Roads, Fences, and Land Drainage.*—The construction and maintenance of farm roads, fences, and ditches—Drains, and cost.

7. *Buildings.*—Buildings required on different classes of farms—Economical arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cow-sheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure—Approximate cost of farm buildings for sizes of farms and system of farming.

MACHINERY AND IMPLEMENTS.

8. *Power.*—The principle of action, construction, and method of working of steam, gas, and oil engines, petrol motors, and boilers—Estimation of the brake horse-power of engines—Care and management of engines and boilers—Power derived from water—Measurement of the quantity of water flowing in a stream—Water wheels—Turbines—Pumps, principle of action and construction—Flow of water through pipes—Windmills—Cost and working expenses in connection with the above.

9. *Agricultural Machinery.*—The mode of action and the general principles involved in the construction and working of farm implements and machinery—Pulleys and belting—Power transmitted by belts—Toothed gearing—Shafting and bearings—Lifting appliances—Strength and care of chains—Lubrication—Construction of simple concrete foundations for engines and machines.

10. *Implements of Harvesting.*—Reaping machines—Mowing machines—Rakes—Teddors—Sweeps—Elevators—Potato raisers.

11. *Implements of Transit.*—Carts, waggons, rick lifters, traction engines, motors.

12. *Threshing and Food-preparing Machinery.*—Threshing machines, screens, winnowers—Hummelers, chaff cutters—Pulpers—Cake breakers.

13. *Dairy Appliances.*—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans—Cheese-making utensils—Vats and presses.

N.B.—Each Candidate should have with him at the Examination a pair of compasses, scales of equal parts, including a scale of one chain to an inch, and the scale fitting the Ordnance map, $\frac{1}{4000}$ or 25·344 inches to the mile, a small protractor, a set square, and a straight-edge about 18 inches in length.

Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.

IV.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere.*—Its composition and relations to plant and animal life.

2. *Water.*—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil.*—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures.*—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives.*—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops.*—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals.*—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding.*—Constituents of foods—Origin, nature, and composition of chief feeding-stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief food constituents—Energy values—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry.*—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.

V.—AGRICULTURAL BOTANY.

In addition to a general knowledge of the morphology, histology, and physiology of plants, candidates will be expected to possess a detailed knowledge of the following subjects :—

British grasses of agricultural importance : recognition of at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively : of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops : their suitability for various climatic and soil conditions. The identification of the more important types of cereals by means of their grain-characters. Characteristics of good and bad samples of cereals.

Materials used in feeding-cakes and meals : identification of.

Grafting, pruning, and the management of orchards.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the attacks of parasitic fungi. Resistance to disease : conditions affecting. The life-history of the more important species of *Plasmodiophora*, *Synchytrium*, *Phytophthora*, *Peronospora*, *Sphaerotheca*, *Nectria*, *Claviceps*, *Sclerotinia*, *Ustilago*, *Tilletia*, *Puccinia*, *Polyporus*, *Armillaria*, and of any fungoid diseases scheduled from time to time by the Board of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology : nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

VI.—AGRICULTURAL BOOK-KEEPING.

Principles of book-keeping ; single and double entry ; opening books, description of subsidiary books, with examples of entries therein ; the ledger ; posting ; preparation of trial balance ; valuation of stocks and effects ; closing and proving the books, preparation of profit and loss account and balance sheet ; ruling off accounts.

Application of special methods to farms of varying requirements.

VII.—AGRICULTURAL ZOOLOGY.

1. The part played by common animals in helping or hindering agricultural operations, as illustrated by moles and voles, insectivorous and other birds, snails and slugs, useful and injurious insects, arachnids and myriapods, earthworms, &c.

2. *General Structure of Insects*, especially the external characters.

3. *Life-history of Insects*.—Economic importance of different stages. A knowledge of the life-history of the principal insect pests as affording a basis for appropriate treatment.

4. *Classification of Insects*.—The general characters of the following Natural Orders : Coleoptera, Lepidoptera, Hymenoptera, Diptera, Hemiptera, Orthoptera, Neuroptera.

5. *Acarina* injurious to Food Crops and Live Stock.
6. *Parasitic Worms*.—Flukes, Tapeworms, and Threadworms.
7. *Preventive and Remedial measures* in regard to insects, acarines, and worm Parasites—*e.g.*, farm practice in relation to the discouragement of Insect Attack. Encouragement of insect-eating birds and mammals. Artificial remedies. Insecticides. Treatment for Parasites.

N.B.—*Practical acquaintance with common animals, especially insects and worm parasites, will be expected. Where the Candidate is not acquainted with the scientific name of an animal, the generally received English name will be accepted. Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

VIII.—VETERINARY SCIENCE.

1. Elementary Anatomy and Physiology of the horse, ox, sheep, and pig.
2. The general principles of breeding—including the physiology of reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.
3. Dentition as a means of determining the age of horses, cattle, sheep, and swine.
4. The management of farm stock in health and disease.

The following won the Diploma in 1913 :—

Diploma with Honours.

1. THOMAS BEATON MANSON, Glasgow University and West of Scotland Agricultural College.
- *2. CHARLES WILLIAM GOODE, University of Leeds.
3. JOHN DARE POWELL, Harper-Adams Agricultural College, Newport, Salop.

Diploma.

- *THOMAS WILLS ARNETT, Burlawn, Wadebridge, Cornwall.
 *LEONARD ASHWORTH, Midland Agricultural and Dairy College, Kingston, Derby.
 *WILLIAM JAMES BORLASE, Gweal-an-vellan, Hayle, Cornwall.
 JOHN WILLIAM BROWNE, Royal College of Science, Dublin.
 ALFRED CHESHER CAMPBELL, West of Scotland Agricultural College, Glasgow.
 JAMES COCHRANE, West of Scotland Agricultural College, Glasgow.
 RICHARD BASIL COMELY, Royal Agricultural College, Cirencester.
 *GEORGE THEODORE FINDLAY, Aberdeen University.
 HAROLD HENRY GARDNER, Harper-Adams Agricultural College, Newport, Salop.
 THOMAS GILLILAND, West of Scotland Agricultural College, Glasgow.
 *ROBERT HART, University College, Reading.
 THOMAS ROBINSON HEWITT, Royal College of Science, Dublin.
 HAROLD EDWIN HIPPISELY, Royal Agricultural College, Cirencester.
 THOMAS ALFRED HOLE, University College, Reading.
 ALBERT BENTLEY HYDE, Harris Institute, Preston.
 RICHARD IBISON, Harris Institute, Preston.
 RICHARD HENRY BISHOP JESSE, B.Sc., Birmingham University.
 WILLIAM KIRKPATRICK, West of Scotland Agricultural College, Glasgow.
 *ROLAND WHITELAW LITTLEWOOD, University of Leeds.
 THOMAS LAMBERT MASHETER, Harris Institute, Preston.
 *EDWARD MILLER MELVILLE, Glasgow University and West of Scotland Agricultural College.

- *THOMAS GERRARD PARKES, Harper-Adams Agricultural College, Newport, Salop.
- *FRANK RAYNS, Midland Agricultural and Dairy College, Kingston, Derby.
- *WILLIAM GERALD SANDERCOCK, Kea Villa, Kea, Truro.
- *GEOFFREY TALBOT, Harris Institute, Preston.
- *HARRY RANDOLPH TAYLOR, Harris Institute, Preston.
- JOSEPH SHEPHERD TOWERS, Harris Institute, Preston.
- *ROBERT HENRY FRANCIS WALLING, Armstrong College, Newcastle-on-Tyne.
- *ALBERT WATSON, University of Leeds.
- *GEORGE WHITTAKER, Harper-Adams Agricultural College, Newport, Salop.
- *HUGH ALEXANDER WYLLIE, Glasgow University and West of Scotland Agricultural College.

* Under new Regulations.

EXAMINATION PAPERS OF PAST YEARS.

Copies of the Papers set at the Annual Examinations for the National Diploma in the Science and Practice of Agriculture, held from 1905 to 1913, may, as far as available, be had upon application. Price 6d. per set.

VETERINARY DEPARTMENT

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who passed for the Society's Certificate is 1183.

The Society votes annually eleven silver medals for Class Competition to each of the two Veterinary Colleges in Scotland, the one in Edinburgh and the other in Glasgow.

FORESTRY DEPARTMENT

THE Society grants FIRST and SECOND CLASS CERTIFICATES in FORESTRY.

1. An Examination will be held each alternate year about the month of April.

2. Next Examination will be held in the first week of April 1915. Entries close on 7th March.

3. Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: (a) The Elements of Botany and Forest Zoology; (b) The Elements of Physics, Chemistry, and Meteorology; (c) Forest Engineering, including Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, road-making, and saw-mills; and Implements of Forestry; (d) Book-keeping and Accounts.

4. The examinations are open to candidates of any age, may be both written and oral, and will include such practical tests as may from time to time be decided to apply.

5. The maximum number of marks for each subject is 100; Pass marks for First-Class Certificate—Forestry, 75; all other subjects, 60. Pass marks for Second-Class Certificate—Forestry, 60; all other subjects, 50.

6. A Candidate who obtains Pass marks in certain subjects, but fails in others, may come up for these other subjects alone, it being understood that without the special permission of the Society no Candidate will be eligible to enter for more than two subsequent examinations.

7. A Candidate who has obtained the Second-Class Certificate may enter again for the First-Class Certificate.

The list of students who obtained certificates prior to 1899 appears in the 'Transactions,' Fifth Series, vol. xi. (1899).

The following have since obtained First-Class Certificates:—

ERIC ARTHUR NOBBS, Department of Agriculture, Cape Town, .	1899
GEORGE POTTS, Grey College, Bloemfontein, Orange River Colony, .	1899
DUNCAN S. RABAGLIATI, 1 St Paul's Road, Bradford, .	1901
FRANK SCOTT, Dumfries House Mains, Cumnock, .	1903
WILLIAM T. STOCKLEY, Rose Villa, Garswood, near Wigan, .	1906
A. FRANK WILSON, C.D.A. (Edin.), Reedieleys, Auchtermuchty, .	1907
GEORGE FISHER, Farm Brook, Pilling, Garstang, Lancs., .	1909
JOHN PATTEN, jun., Hulne Park, Alnwick, .	1909
ALEXANDER MITCHELL, Dalmeny Park, Edinburgh, .	1909
JOHN D. DAVIDSON, Brimstage, Birkenhead, .	1911
DONALD DOULL, M.A., A.R.C.Sc., High School, Kelso, .	1911

The following have since obtained Second-Class Certificates:—

WILLIAM BRUCE, B.Sc., East of Scotland College of Agriculture, Edinburgh, .	1901
RAJAPPIER SWAMINATHAN, 56 Jesus Lane, Cambridge, .	1901
THOMAS USHER, Courthill, Hawick, .	1901
ALLAN CARRUTH, Lawmarnock, Kilbarchan, .	1905
ALEX. M. LUMSDEN, Newburn Schoolhouse, Upper Largo, .	1905
ROBERT M. WILSON, Laws Cottage, Duns, .	1905
THOMAS CAMPBELL, Greystoke, Penrith, .	1906
DONALD FERGUSON, Quarry Lane, Lennoxton, .	1906
CHARLES PENRHYN ACKERS, Huntly Manor, Gloucester, .	1908
ROBERT HOWIE, Beechwood, Arbroath, .	1908
JOHN TROTTER, D.Sc., 22 West Saville Terrace, Edinburgh, .	1908
JAMES A. S. WATSON, Downieken, Dundee, .	1908
NORMAN H. PEARSON, 52 Percy Park, Tynemouth, .	1909
LIONEL F. STOBART, Royal Agricultural College, Cirencester, .	1911
ALEXANDER GEORGE NORRIE, Cairnhill, by Turriff, .	1913
WILLIAM WATT, Darnaway, Forres, .	1913

SYLLABUS OF EXAMINATION

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry*.—1. Effects of heat, light, moisture, and air-currents on forest vegetation. 2. Effects of depth, porosity, moisture, and chemical composition of the soil on forest vegetation. 3. Effects of forest vegetation on the soil and air. 4. Rate and extent of development, longevity, and reproductive power of trees. 5. Pure and mixed woods. 6. Systems of silviculture.

II. *Forest Organisation*.—7. General ideas regarding a regulated system of forest management. 8. Knowledge of working plans of forests.

III. *Practical Management of Woods*.—9. Draining and irrigation. 10. Choice of species for various situations. 11. Seed and sowing, including nurseries. 12. Planting. 13. Natural regeneration by seed, shoots, and suckers. 14. Formation of mixed woods. 15. Tending of young woods. 16. Pruning. 17. Thinning. 18. Silvicultural characteristics of the principal trees.

IV. *Injuries by Storms and Fires*.—19. Storms. 20. Fires.

V. *Timber*.—21. Its technical properties. 22. Its defects. 23. Recognition of different kinds of timber. 24. Processes for increasing its durability.

VI. *Utilisation of Produce*.—25. Uses of wood and other produce. 26. Felling. 27. Conversion. 28. Seasoning. 29. Transport. 30. Sales. 31. Harvesting of bark.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(a) FOREST BOTANY.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(b) FOREST ZOOLOGY.

The group Insecta : its position in the animal kingdom. Structure, mode of reproduction, and metamorphosis of insects. The outlines of classification of the group. Conditions favourable to the numerical increase of insects. Natural checks to increase (*e.g.*, birds, mammals, parasitic insects). The identification and life-history of the more important insects injurious to forest-trees and fruit-trees. The damage caused by these insect pests and their mode of attack. The damage caused by animals. Preventive and remedial measures.

III.—PHYSICS, CHEMISTRY, AND METEOROLOGY.

Physics.

Mass, weight, specific gravity, solid, liquid, and gaseous states of matter. Capillarity, osmose, vapour tension, suction pump, force pump, syphon, barometer, atmospheric pressure. Boyle's law. Levers and pulleys. Heat, measurement of heat, specific heat; transference of heat by conduction, convection, and radiation. Boiling and freezing. Latent heat. The thermometer. The conservation and transformation of energy. Light—reflection, refraction, polarisation; the spectrum. The rudiments of electricity and magnetism.

Chemistry.

Elements. Oxygen, hydrogen, nitrogen,—their preparation, properties, and chief compounds. Acids, bases, salts. Combustion, oxidation, reduction. Sulphur, carbon, phosphorus; and their compounds, with oxygen and hydrogen. Metals—potassium, sodium, calcium, magnesium, aluminium, iron, copper, lead, mercury, and their chief compounds. Carbohydrates, marsh gas, olefiant gas, alcohol, acetic acid, oxalic acid. Distillation of wood and coal.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. The weathering of rocks and soils. Gases injurious to vegetation.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, ROAD-MAKING, AND SAWMILLS.

1. The use of the level and measuring-chain. Measuring and mapping surface areas. 2. The measurement of solid bodies—as timber, stacked bark, fagots, &c., earthwork. 3. The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs. 4. The setting out and formation of roads for temporary or permanent use. 5. The construction of bridges over streams and gullies; of gates or other entrances. 6. The construction and working of estate saw-mills.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions. 2. Book-keeping—including the description of books to be kept, and the solution of practical questions in Book-keeping and the preparation of Accounts

EXAMINATION PAPERS, 1913

PRACTICAL FORESTRY.

1. In a practically treeless, hilly track, the planting of which you are entrusted with, explain the principles which would guide you in arriving at the limit of altitude for profitable tree growth, considering generally the effect of latitude, aspect, wind, and soil (plantable soil being classed good, fair, and poor). State, briefly, the advantages and disadvantages of such a classification of soils.

2. Give the chief silvicultural characteristics of the following trees : Oak, Ash, Sycamore, Beech, Larch, Scots Pine, Spruce, Sitka Spruce, Douglas and Silver Fir, and give an example of a good economic mixture from (a) the hardwoods and (b) the conifers, stating the advantages and disadvantages to be gained from each mixture.

3. In restocking a woodland area, half of which has been cleared of hardwoods and half of conifers, but all of which has to be replanted with conifers, what precautions would you take, in each half, to prevent insect or fungoid attack, naming the insects and fungi to be guarded against, and giving your reasons?

4. A landlord wishes to utilise his timber to the best advantage. His crops are mixed, fairly wide apart, and of all degrees of quality. There is a large demand for timber for estate purposes, and a fairly good market in the district. Explain (1) the nature of the plant, together with any of the more important points of management you would adopt for the manufacture of the timber, and (2) the principles and methods of any preservative process you would adopt for estate purposes.

5. An estate of good agricultural land with 4000 acres of wood, within an easy distance of good markets, has hitherto been neglected, but it is proposed to adopt some better method of management so as to have a continuous and uniform supply of timber. There are 900 acres of mature wood, composed chiefly of mixed hardwoods and Larch, and 1100 acres of a similar character, from 40 to 60 years of age. There are 1000 acres of wood, from 20 to 40 years of age, 500 of which is pure Larch, well stocked but very much diseased, 500 being mixed Larch and hardwood quite healthy. The remainder of the crop—viz., 1000 acres of young woods under 20 years of age, also Larch and hardwood, are quite healthy, but rather understocked.

State the general principles of management you would adopt, embracing (1) the exploitation of the older woods, (2) the management of the middle-aged woods, and (3) your proposed treatment of the younger woods.

6. An estate with 2000 acres of timber is to be sold, and you are invited by the vendor to make a valuation of the timber. The timber is composed of 500 acres of mature wood of Oak, Ash, and Larch, 100 years of age, the crop averaging 150 trees per acre ; 500 acres of pure Scots Pine, 80 years of age, containing 200 trees per acre ; and 500 acres of pure Scots Pine, from 30 to 40 years of age. There are also 500 acres of young plantations under 20 years of age. State how you would proceed to ascertain volume and value of the first three classes, and on what principle you would value the younger plantations. Give prices per cubic foot for the older timber.

(Three hours allowed.)

FOREST BOTANY AND FOREST ZOOLOGY.

(A) FOREST BOTANY.

(Four questions only to be attempted.)

1. Write an account of the structure of the stem, as seen in transverse section, in any British forest tree. Describe how this structure is attained. What are the uses of the several elements that make up the stem?

2. What is mycorrhiza? Describe in detail the mycorrhiza of any British forest tree, and indicate the use of the mycorrhiza to the tree in the particular case you select.

3. Compare in the matter of disposition and of persistence the leaves of Pinus, Alnus, Ilex. Give an explanation of the differences between them, and describe leaf-fall.

4. Give an account of the processes by which a forest tree obtains its carbon.

5. Write an account of dry-rot, showing its cause, methods of prevention, and remedy.

(B) FOREST ZOOLOGY.

(Two questions only to be attempted.)

1. What mammals are destructive to trees? What damage does each do, and how would you recognise it?

2. Write a general account of the "Gall Flies" (Cynipidæ).

3. Make drawings illustrating the work of the Elm Bark Beetle (*Scolytus destructor*), the Pine Beetle (*Hylurgus piniperda*), and the large Pine Weevil (*Hyllobius abietis*). Name the parts in the drawings.

(Two hours allowed.)

PHYSICS, CHEMISTRY, AND METEOROLOGY.

1. If a tall cylinder of water is heated at the bottom the water becomes hot all through, while if heated at the top only the top becomes hot. Explain the reasons for this. What is meant by (a) Specific Heat, (b) Latent Heat?

2. To what height can water be raised by a suction pump? Explain how the pump acts. Would it make any difference if the pump were situated 5000 feet above sea-level?

3. Give an account of the composition of the atmosphere. Describe exactly how you could show the proportion of Oxygen present in air. How could you determine the amount of Carbon Dioxide present?

4. Mention any gases injurious to vegetation. Also mention sources from which such gases are likely to be passed into the atmosphere.

5. Name the principal Carbohydrates which occur in plants, and give some account of the properties of the leading Carbohydrates you mention? What is Hydrolysis?

(An hour and a half allowed.)

LAND MEASURING, &c.

1. It is proposed to utilise the water from a stream for driving a turbine. Describe as fully as possible how you would proceed to estimate the quantity of water flowing in the stream, and the total power available. Give sketches showing the arrangements you suggest for conserving the water and conveying it to the turbine.

2. Explain how you would continue a line in a direction which is interfered with by an obstacle (a) if you can see over the obstacle, but cannot chain over it; (b) if you can neither see over the obstacle nor chain over it.

3. Draw a rough sketch of a field, and find its area (in acres, roods, and poles) from the following notes :—

4. Describe the plane-table. For what kind of work is it most suitable? Give a clear account of how you would set the instrument up in a field, and how you would proceed to carry out a survey with it.

5. Find the cost of digging a ditch 200 yards long, 2 feet wide at the bottom, and $3\frac{1}{2}$ feet deep. Slope of sides 1 vertical to $1\frac{1}{2}$ horizontal. The cost of removing the earth is 1s. per cubic yard.

6. The following readings were taken with a dumpy level: 6.43; 3.72; 1.18; 8.93; 4.21; 1.15; 5.32; 7.85; 10.96; 3.83; 8.42. The reduced level of the first point was 38.63. The level was shifted after the third, fifth, and ninth of the above readings. Rule a page of a field-book, enter the readings, and check the results. Plot a section. The points at which the staff was held were $\frac{1}{2}$ -chain apart.

7. It is proposed to erect a timber bridge, to be used for ordinary estate work, over a small stream. The outer ends of the bridge rest on concrete abutments, and the total span is 48 feet; the distance from the floor of the bridge to the bed of the stream does not exceed 12 feet. Show, by the help of sketches, the system of construction you would adopt, and give some notes as to the method of determining the sizes of the timbers for such a bridge.

(Two hours allowed.)

ARITHMETIC AND BOOK-KEEPING.

1. Simplify $(\frac{1}{28} \text{ of } 3\frac{1}{2}) + (\frac{3}{8} \div \frac{7}{8}) - (\frac{1}{14} - \frac{1\frac{1}{2}}{3}) \div (2 - \frac{5}{9})$.

2. Express £9, 17s. 10 $\frac{1}{2}$ d. as the decimal of a guinea, correct to five places.

3. A piece of land is purchased for the sum of £967, 5s. 6d., and it is sold again for £1125, 4s. 9d. What is the rate per cent of the profit on the deal, calculated to two places of decimals?

4. If 2 men can do as much work as 3 women, and 4 women can do as much work as 5 boys, find how long 6 men, 16 women, and 10 boys will take to do a piece of work which one man will do in 4 days of 11 hours each.

Links.		
⊙ B		
1080		
900	210	
750	175	
610	0	
470	164	
350		
220		
180		
120		
⊙ A		
		RANGE
		N.

5. The following are the cash transactions of Robert M'Lean, forester on the Brownrigg Estate, for the quarter to 31st December 1912. Incorporate the various items in a branched statement of Receipts and Payments, bringing out the balance of Cash on Hand at 31st December 1912. The amount of Cash on Hand at 30th September 1912 was £16, 10s.

1912.			
Oct. 1.	Paid 'Northern Advertiser' for advertising sale of timber .	£2 10 0	
" 8.	Received price of timber sold by public auction .	270 0 0	
" "	Paid Auctioneer commission on sales .	30 0 0	
" 21.	" R. Gardiner his account for young trees .	62 10 0	
" "	" J. Jones for carriage .	1 5 0	
" 29.	" J. Banks for wages book .	0 15 0	
" 31.	" Estate wages for month .	60 0 0	
" "	" Insurance Act contributions .	0 6 0	
Nov. 5.	" P. Good for saw and axes .	3 15 0	
" 16.	" P. Good for repairs to implements .	0 10 0	
" "	" Insurance premium under Workmen's Compensation Act .	2 5 0	
" 25.	Received from J. Peat for fallen timber sold to him by private treaty .	10 0 0	
" 27.	" Price of 200 Scots pine trees sold privately to R. Grubb .	92 0 0	
" 30.	Paid estate wages for month .	62 10 0	
" "	" Insurance Act contributions .	0 6 6	
Dec. 2.	Received sum to account of price of 3000 larch trees sold by public roup .	1195 0 0	
" "	Paid Auctioneer's commission .	72 5 0	
" 16.	" 'Northern Post' for advertising sale .	1 0 0	
" 21.	" H. Ramage for printing catalogue .	3 12 0	
" 26.	" County Assessments .	112 17 0	
" 28.	Received balance of price of sale of 3000 larch trees	250 0 0	
" 29.	" from J. Murray for cart-load of firewood sold privately .	2 0 0	
" 31.	Paid estate wages for month .	55 0 0	
" "	" Insurance Act contributions .	0 5 6	
" "	" R. M'Lean, salary for quarter .	45 0 0	
" "	" R. M'Lean, postages, &c. .	0 16 6	
" "	" To proprietor .	1295 0 0	

6. Draft specimen page of the Wages Book which you would recommend R. M'Lean to keep, providing therein for a proper record of National Insurance Act contributions.

(One hour and a half allowed.)

DAIRY DEPARTMENT

EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

This Examination, instituted in 1897, is conducted by the National Agricultural Examination Board, appointed jointly by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland.

REGULATIONS.

1. The Societies may hold annually in England and in Scotland, under the management of the National Agricultural Examination Board appointed by them, one or more Examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters "N.D.D."

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. A non-returnable fee of £1 will be required from each candidate.

[After 1914 the Entrance fee for this Examination will be two guineas.]

4. Forms of Entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.," and must be returned to him duly filled up, with the entry-fee of £1, on or before 15th August.

5. Forms of Entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned to him duly filled up, with the entry-fee of £1, on or before 15th August.

6. A candidate may enter for the Examination either in England or Scotland, but not in both; and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa*.

7. As a preliminary to the acceptance of an application for permission to enter for the Examination, a candidate must produce:

- (1) A certificate testifying that he or she has received at least SIX session months instruction (not necessarily continuous) in practical dairy work at an approved Dairy training institution.
 - (2) Evidence that he or she has spent at least four months on an approved Dairy farm, and that he or she has taken part in the work.
 - (3) Certificates in a prescribed form, from a recognised institution (or recognised institutions) showing that he or she has attended approved courses in Chemistry, Bacteriology, and Botany, and has satisfied the authorities of the institution of his (or her) fitness for admission to the Examination.
8. In the Examination a candidate will be required to satisfy the Examiners, by means of written papers, practical work, and *visd voce*, that he or she has—
- (1) A general knowledge of the management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of Dairy work as pursued on a farm.
 - (2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

- (3) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard-pressed Cheese, the Examiner in Cheesemaking having the option of saying during the Examination what variety a candidate shall make :—

AT THE ENGLISH CENTRE—Cheddar, Cheshire or Derby.

AT THE SCOTTISH CENTRE—Cheddar, Dunlop or Cheshire.

- (4) Capacity for imparting instruction to others.

9. The Board reserve the right to postpone, to abandon, or in any way, or at any time, to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS IN 1914.

ENGLAND—SATURDAY, September 12th, and following days, at the University College and British Dairy Institute, Reading; last date for receiving applications, SATURDAY, August 15th.

SCOTLAND—SATURDAY, September 19th, and following days, at the Dairy School for Scotland, Kilmarnock; last date for receiving applications, SATURDAY, August 15th.

SYLLABUS OF SUBJECTS OF EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

I.—GENERAL MANAGEMENT OF A DAIRY FARM.

1. *General Management of Pastures and Crops on a Dairy Farm.*
2. *Buildings.*—Situation, Surroundings, Construction, Ventilation, and Drainage of Farm Buildings. Suitability of building materials. Water supply. Construction and arrangements of Dairies: (a) for General Purposes; (b) for Special Purposes.
3. *Foods and Feeding.*—Summer and Winter Feeding of Dairy Cattle. Root crops. Green fodder. Ensilage. Different kinds of food and their composition. Their effect upon Milk, Butter, and Cheese. Special Foods used in Dairy Feeding. Preparation of food for Dairy Stock. Rearing and feeding of young Stock. Feeding and management of Pigs and Poultry.
4. *Dairy Cattle in Health and Disease.*—Characteristics of different Breeds, and choice of Dairy Cattle. General functions of the organs of the animal body. Breeding. Parturition. Organs which secrete milk. Process of milk secretion. Changes which food undergoes during digestion. Diseases of Dairy Cattle and their remedies.

II.—MANAGEMENT OF DAIRY.

1. *Milk and Cream.*—Process of Milking. Dairy Utensils and Appliances, hand and power. Cooling of Milk. Separation and ripening of Cream. Different systems of Cream-raising. Utilisation of Skim-milk. Keeping of Milk. Importance of Cleanliness. Diseases spread by Milk. Conveyance and sale of Milk. Milk records. Keeping of Dairy and Farm Accounts. Creameries. Butter and Cheese Factories. Different systems of Dairying and their comparative returns.

2. *Butter*.—Churns and other Butter-making appliances, hand and power. Souring of Cream. Churning. Washing and working of Butter. Butter-milk. Packing and transmission of Butter. Salting and keeping of Butter. Colouring. Characteristics of good Butter.

3. *Cheese*.—Principles of its manufacture. Making of different kinds of Cheese (from cream, whole-milk, and skim-milk). Acidity of Milk. Use of Rennet and its substitutes. Whey. Appliances for Cheese-making. Ripening and storage of Cheese. Packing and sale of Cheese. Making of Cream and other soft Cheeses.

III.—CHEMISTRY AND BACTERIOLOGY.

[*N.B.*—In this Section there will be expected of the candidate a sound understanding of the scientific principles underlying the practice of Dairying, a knowledge of the composition, nature, properties, and changes undergone by the different substances met with in Dairying, and a general acquaintance with the principles of laboratory methods so far as Dairying is concerned.]

1. *General Principles of Chemistry*.—The nature of elements and compound bodies. The different forms of matter—solid, liquid, gaseous. Specific gravity, and instruments for determining it. Temperature, and methods of measuring it. Thermometric scales. The influence of temperature in Dairy operations. Physical and chemical changes involved in the following: solution, precipitation, filtration, distillation, oxidation, and reduction. Acids, Bases, Salts—their distinctive properties. Acidity and Alkalinity—their influence and quantitative estimation.

The Atmosphere—its constituents and impurities; its influence on Dairy operations. Atmospheric pressure.

Water—constituents of pure and natural waters. The impurities of water, and whence derived. The importance of a pure water-supply in Dairying.

General knowledge of the elementary chemistry of the following substances and their compounds so far as met with in Dairying: Potash, Soda, Ammonia, Lime, Phosphoric Acid, Alcohol, Acetic Acid, Carbonic Acid, Butyric Acid, Lactic Acid, Albumen, Casein, Fats, Milk-sugar, Glycerine, Pepsin.

Saponification of Fats.

2. *Milk and its Products*.—The nature, composition, properties, and chemical constituents of milk. Microscopical appearances presented by milk. The circumstances that affect the quality and quantity of milk produced by the cow. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and use. Physical and chemical changes involved in the making and keeping of Butter, and in the manufacture and ripening of Cheese. Separated Milk, Condensed Milk, Fermented Milk. The use of Preservatives. Methods of Milk-testing—Mechanical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of Milk and Butter. Adulteration of Milk, Cream, Butter, and Cheese—the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

3. *The Chemistry of Feeding*.—The principal constituents of Food materials, and the functions they severally fulfil. The influence of Food constituents on milk production. Assimilation and Digestion. Animal Heat and Respiration. Milk as a Food. The relation of Food to Manure.

4. *Bacteriology*.—Moulds. Yeasts. Bacteria. The principal kinds of

Bacteria met with in Dairying—their forms, methods of reproduction, and conditions of life. The influence of physical agencies upon Bacterial life. Air and Water as carriers of Bacteria. The changes produced by Bacteria in milk and its products. Useful forms and their functions. Harmful forms and their effects—Coagulation, Discoloration, Taints, &c. Pathogenic organisms. The classification of organisms—organised ferments and enzymes. The isolation of Bacteria. Methods of preparation of pure cultures and their practical use. Nutritive media. Soil Bacteriology—Assimilation of Nitrogen by Plants—Nitrification—Denitrification. Pasteurisation and Sterilisation—the practical application of these to Dairy matters. Fermentation and Putrefaction. Disinfectants and Preservatives.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

IV.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) to produce at or before the Examination a satisfactory certificate of proficiency in the Milking of Cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (i) *Hard-pressed, of not less than 30 lb.; (ii) Veined or blue-moulded, of not less than 10 lb.; and (iii) also to make one or other of the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Évêque.

* A candidate must be prepared to make any one of the following varieties of Hard-pressed Cheese:—

AT THE ENGLISH CENTRE—Cheddar, Cheshire or Derby.

AT THE SCOTTISH CENTRE—Cheddar, Dunlop or Cheshire.

The Examiner in Cheesemaking will intimate the kind of Cheese to be made during the Examination.

V.—CAPACITY FOR IMPARTING INSTRUCTION TO OTHERS.

Candidates must also show practically that they are familiar with the management of a Dairy, and are capable of imparting instruction to others.

The following obtained the Diploma in Scotland in 1913:—

ARCHIBALD ALLAN, 5 Huntly Terrace, Shettleston, Lanarkshire.

Miss NELLIE BENNION, Daisy Bank Farm, Barthomley, Crewe.

WILLIAM HENRY BIGNALL, Eden Orphanage, Astley Bridge, Bolton.

ROBERT WALLACE BROWN, Garliffan, Cumnock, Ayrshire.

WILLIAM CALDWELL, Burnhouses, Kilmarnock.

Miss CATHARINE DOUGALL, Pretoria, South Africa.

JOHN HARVEY FAULDER, 21 Lazonby Terrace, Harraby, Carlisle.

Miss MARY FRASER, Torgormack, Kilmorack, Beaulieu.

Miss MAGGIE GIBSON, Woodpark, Dalbeattie.

CHARLES WILLIAM GOODE, Holmfield, London Road, St Albans.

Miss EDIE HAMILTON, Pretoria, South Africa.

ALEXANDER HAY, The Manse, The Mall, Montrose.

ANDREW HEAL, Otterburn, S.O., Northumberland.

ROBERT JAMES KERR, 1 High Street, Kirkeudbright.

WILLIAM KIRKPATRICK, Longbridgemuir, Ruthwell, Dumfries.

JAMES KIRKWOOD, West Michelton, Lochwinnoch, Renfrewshire.

JAMES RUSSELL M'CALLUM, 9 Pitt Street, Edinburgh.
 HARRY MUIR M'CREATH, Challock, Newton Stewart, Wigtownshire.
 JOHN MILLER, Stairhill, Mauchline, Ayrshire.
 Miss DOROTHY GRAHAM NESS, 58 Albert Drive, Pollokshields, Glasgow.
 JOSÉ PEDEN, Ikreny, Queen Mary Avenue, Crosshill, Glasgow.
 ROBERT JAMES SMITH, East Mains, Knockando, Morayshire.
 Miss DAISY TOCHER, Blairmore Farm, Nairn.
 Miss MARY TOCHER, Blairmore Farm, Nairn.

The following obtained the Diploma in England in 1913 :—

PERCY WALTER BAILEY, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss NORA CHEW, Lancashire County Council Farm, Hutton, Preston.
 Miss RUBY KATHLEEN COVENTRY, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss RUBY DIXON, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss ESSIE EVANS, University College of Wales, Aberystwyth.
 HAROLD HENRY GARDNER, Harper-Adams Agricultural College, Newport, Salop.
 JOHN STUART BEATLEY GATHERGOOD, University College and British Dairy Institute, Reading.
 ARTHUR GERRANS HILL, East Anglian Institute of Agriculture, Chelmsford.
 THOMAS HENRY HOWARD, University College and British Dairy Institute, Reading.
 FLOWERS LEONARD KIRK, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss EDITH MARY LEWIS, University College and British Dairy Institute, Reading.
 Miss MURIEL HOPE MONKS, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss WINIFRED ALICIA MORE, Midland Agricultural and Dairy College, Kingston, Derby.
 HERBERT WILFRID PAGE, East Anglian Institute of Agriculture, Chelmsford.
 Miss GLADYS PIMLOTT, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss L. ELEANOR PRITCHARD, Midland Agricultural and Dairy College, Kingston, Derby.
 MALCOLM ION BELL SHAW, University College and British Dairy Institute, Reading.
 Miss WINIFRED SPILSBURY, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss SARAH TAMAR SLINGER, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss LAURA MERIOL TREVOR, University College and British Dairy Institute, Reading.
 EDWARD WEBSTER, Midland Agricultural and Dairy College, Kingston, Derby.
 Miss GERTRUDE WILCOCK, Lancashire County Council Farm, Hutton, Preston.

EXAMINATION PAPERS OF PAST YEARS.

Copies of the Papers set at the Annual Examinations for the National Diploma in the Science and Practice of Dairying held from 1896 to 1913, may, so far as available, be had on application. Price 6d. per set.

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. TOCHER, D.Sc., F.I.C., Crown Mansions
41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT TO ANALYSES.

MANURES, FEEDING-STUFFS, SOILS, AND
AGRICULTURAL PRODUCTS.

The fees for analyses made for members of the Society shall, until further notice, be as follows:—

The determination of one ingredient in a single sample of a <i>manure</i> or of a <i>feeding-stuff</i> ,	5s.
The determination of two or more ingredients in a single sample of a <i>manure</i> or of a <i>feeding-stuff</i> ,	10s.

For example—

Linseed and other cakes, for oil or for albuminoids,	} 5s.	
Feeding-meals, ground cereals, for oil or for albuminoids,		
Bone-meals, for nitrogen or for phosphate,		
Compound manures, for nitrogen or for soluble phosphates, or for insoluble phosphates or for potash,		
Superphosphate, for soluble phosphate or for insoluble phosphate,		
Thomas-phosphate powder, for citric soluble phosphate or for total phosphate,	} 10s.	
Linseed and other cakes, for oil and albuminoids, &c.,		
Feeding-meals, ground cereals, for oil, albuminoids, &c.,		
Bone-meals, for nitrogen, phosphate, &c.,		
Compound manures, for nitrogen, soluble phosphates, insoluble phosphates, and potash,		
Superphosphate, for soluble phosphate and insoluble phosphate,		
Thomas-phosphate powder, for citric soluble phosphate and total phosphate,		
Limestone, giving the percentage of lime,	£0	5 0
Limestone, complete analysis,	1	0 0
Lime, including ground lime, percentage of alkaline lime, " " " complete analysis,	1	0 0
Analysis of soil, to determine fertility and recommenda- tion of manurial treatment,	1	10 0
Complete analysis of soil,	2	10 0
Analysis of agricultural products—hay, grain, ensilage, roots, &c.,	1	0 0

These charges apply only to analyses made for agricultural purposes, and for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

DAIRY PRODUCE.

Milk, full analysis,	£0 10 0
" solids and fat,	0 5 0
" fat only,	0 2 6
Butter, full analysis,	0 10 0
" partial analysis (water and fat),	0 5 0
Cheese,	0 10 0

WATER.

Analysis of water ¹ to determine purity and fitness for domestic use (the Committee reserve power to refuse from one member more than two samples annually at the reduced fee).....at the reduced fee of	1 0 0
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MISCELLANEOUS.

Search for poisons in food or viscera,	2 0 0
Sulphate of copper, percentage of copper and purity,	0 5 0
" " complete analysis,	0 10 0
Arsenic, carbolic acid and tar acids, and other poisons used in making sheep dips, insecticides, &c.,	5s. to £1

Samples should be sent (carriage paid) to Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

Note to Members sending Samples for Analysis.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the chemist, when sending samples for analyses, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one: Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the chemist for analysis.

¹ Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.

FEEDING-STUFFS.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nudded to a size not larger than walnuts. The nudded cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the analyst, and one or more duplicates retained by the purchaser.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench vertical scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner two pounds of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately. Five or six similarly drawn samples at least should be taken from different parts of the field, and kept separate while being sent to the chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed; above 2 lb. weight required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a number of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the analyst.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the laboratory as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

N.B.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from the laboratory, Crown Mansions, 41½ Union Street, Aberdeen.

LOCAL ANALYTICAL ASSOCIATIONS.

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894.

COMPOSITION AND CHARACTERISTICS OF MANURES AND FEEDING-STUFFS.

(See '*Transactions*,' *Fifth Series*, vol. *xi*. 1899.)

FORMS OF GUARANTEE

GUARANTEE OF MANURE.

I guarantee that the manure called.....and sold by me to
.....contains a minimum of—

Soluble phosphoric acid = Phosphate of lime dissolved.....per cent.

Insoluble phosphoric acid = Phosphate of lime undissolved.....per cent.

Potash salts . . . = Potash (K_2O)per cent.

Total nitrogen . . . = Ammoniaper cent.

Signature of seller.....

Date.....19...

GUARANTEE OF FEEDING-STUFF.

I guarantee that the feeding-stuff called.....and sold by me to
.....contains a minimum of—

..... per cent albuminoids.

..... per cent oil.

..... per cent carbohydrates.

Signature of seller.....

Date.....19...

UNITS TO BE USED IN DETERMINING THE MARKET PRICE OF MANURES.¹

Terms—CASH, including Bags gross weight—not including Carriage.

N. B.—These units are based on the **RETAIL CASH PRICES OF MANURES** at Leith and Glasgow. When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the *cash price* per ton at which **TWO TONS** may be bought in fine sowable condition at Leith or Glasgow. Larger purchases may be made on more favourable terms, but for smaller purchases an extra charge of 1s. 6d. per ton is made.

FOR SEASON 1914.

CASH PRICES AS FIXED ON 4TH FEBRUARY.

Items to be Valued.	Peruvian (Riddled).	Bone Meal.	Steamed Bone Flour.	Super-phosphates.	
	Phosphatic.			Under 30% Sol.	30% Sol. or over.
	P. unit.	P. unit.	P. unit.	P. unit.	P. unit.
Phosphates dissolved	1/5	..	..	2/-	1/10
" undissolved		1/8	1/4	..	..
Potash	3/6	..	..	..	..
Nitrogen	17/6	14/6	13/6	..	..
Prices per ton—					
From	115/- upwards	185/-	95/-	51/8	
To		140/-	100/-	70/-	

MANURES.			
At LEITH and GLASGOW.	Guarantee.	Price per Ton.	Unit.
	Per cent.	£ s. d.	
Sulphate of ammonia ²	20 Nitrogen	12 15 0	Nit. = 12/9
Nitrate of soda, 95 per cent ²	15 5 "	10 15 0	" = 13/10½
Muriate of potash, 80 per cent	50 Potash	9 0 0	Pot. = 8/7
Kainit (unpulverised)	12 4 "	2 8 9	" = 8/11
Potash salts	30 "	4 17 6	" = 8/8
	22 Total		Phos.
	phosphate	1 8 9	Total = 1/4
	30 "	2 0 0	" = 1/4
	38 "	2 7 6	" = 1/8
Basic slag (Thomas - phosphate powder)	17 Citric sol- uble phos- phate		Phos. cit.
	26 "	1 8 9	sol. = 1/8
	34 "	2 0 0	" = 1/6½
	34 "	2 7 6	" = 1/5
Ground mineral phosphate	60 Total phos.	2 7 6	Total phos. = 9/1
Nitrolim	18 Nitrogen	10 12 6	Nit. = 11/9½
Nitrate of lime	13 "	10 0 0	" = 15/5

NOTE.—This Schedule of Unit Prices of Manures and Feeding-Staffs is revised each year in the first week of February. Copies of the Schedule may be had by Members any time thereafter.

¹ Instructions regarding units and the valuation of manures are given on p. 88.

² These are the February prices, but they are subject to variation from month to month, or oftener.

FEEDING-STUFFS.				Price per ton at Leith and Glasgow.
	Average Analyses.			
	Album.	Oil.	Carbo- hydrates.	
Linseed-cake	30	9	35	£ s. d. 7 15 0
" Canadian or American	30	8	35	7 10 0
Decorticated cotton-cake	40	9	25	8 7 6
" " Seed-meal	40	9	25	8 5 0
Undecorticated " (Egyptian)	22	5	33	5 12 6
" " (Bombay).	19	4.5	35	4 7 6
Soya-bean cake	42	6	28	7 15 0
Soya-bean meal	38	17	24	9 0 0
Bean-meal *	25	1.5	50	8 0 0
Bran, broad	15	4	53	6 10 0
" medium	15	4	55	5 10 0
Wheat, best thirds	16	4.5	55	6 0 0
Rice-bran, Rangoon	12	13	50	4 15 0
Locust-bean meal	6	1	70	6 15 0
Dried distillery grains †	20	8	45	5 5 0
" brewery or malt distillery grains †	20	6	45	5 0 0
Indian corn *	10	5	70	5 15 0
Faisley meal (at Paisley)	15	9	60	5 17 6
Linseed (whole)	22	35	22	14 0 0
Treacle, best grocery . . . . .	..	..	..	5 5 0

* These are the February prices, but they are subject to variation from month to month, or oftener.

† Bags included.

CLASSIFICATION OF MANURES.

Peruvian guano	{	Guanos with over 4 per cent of nitrogen are to be considered as nitrogenous. Those with less than this percentage are to be classed as phosphatic guano.
Bone-meal	{	Genuine bone-meal contains from 48 per cent to 55 per cent phosphates, and from $3\frac{1}{2}$ per cent to $4\frac{1}{2}$ per cent nitrogen. If phosphates are low, nitrogen will be high, and conversely.
Steamed bone-flour	{	Ground to flour, and containing about 60 to 70 per cent phosphates and about 1 to $1\frac{1}{2}$ per cent nitrogen.
Dissolved bones	{	Must be pure—i.e., containing nothing but bones and sulphuric acid.
Mixtures and compound manures †	{	To be valued according to the following unit prices: nitrogen, 18s. 6d.; soluble phosphate, 1s. 10d.; insoluble phosphate, 1s. 5d.; potash, 3s. 4d.; with an addition of 5s. per ton for bags and 7s. 6d. per ton for mixing. These units give the cash price at Leith and Glasgow. They apply only to mixtures made from high-class materials. For instance, the nitrogen of mixtures valued by these units should not be from shoddy, hair, or leather, or the insoluble phosphates from ground mineral phosphates.
Basic slag (Thomas-phosphate powder)	{	Citric soluble phosphate means phosphate soluble in citric acid in accordance with the official method of Board of Agriculture. Fineness of grinding is of importance. The coarsest kind used should be so finely ground that at least 80 per cent passes through a wire sieve of about 9600 holes per sq. inch.

† Low-grade mixed manures are sometimes sold under names calculated to lead purchasers to believe that they are made from materials of a valuable kind, which are either not present at all or form only a small percentage of the mixture. Purchasers should see that the analysis and the nature of the article correspond with the name.

INSTRUCTIONS FOR VALUING MANURES.

The unit used for the valuation of manures is the hundredth part of a ton, and as the analyses of manures are expressed in parts per hundred, the percentage of any ingredient of a manure when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

As an example take muriate of potash—a good sample (see p. 36) will be guaranteed to contain 80 per cent *pure* muriate of potash; the other 20 per cent consisting of unimportant impurities, such as common salt. But all potash manures are valued according to the amount of POTASH they yield, and 80 per cent of pure muriate of potash yields 50 per cent potash (K_2O)—i.e., 50 units per ton; and as a ton of muriate of potash costs £9, the price of the unit is the fiftieth part of that—viz., 3s. 7d. If on analysis a sample of muriate of potash guaranteed to contain 50 per cent of potash is found to contain only 49 per cent, the price per ton will be 3s. 7d. less—viz., £8, 16s. 6d.

Similarly with all other manures, the price per unit is derived from the price per ton of a sample of good material up to its guarantee, and therefore the proper price per ton of a manure is found by multiplying the price of the unit of the valuable ingredient by the percentage as found by analysis. If a manure contains more than one valuable ingredient, the unit value of each ingredient is multiplied by its percentage, and the values so found when added together give approximately the price per ton of the manure.

Nitrate of soda contains no ammonia, but it contains nitrogen, and 14 units of nitrogen are equivalent to 17 units of ammonia.

The commercial values of manures are determined by means of the UNITS in the following manner:—

Take the analysis of the manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphate)	$\left\{ \begin{array}{l} \text{No other items but these} \\ \text{are to be valued, ex-} \\ \text{cept in the case of} \\ \text{slag, where citric sol-} \\ \text{uble phosphate may} \\ \text{be valued.} \end{array} \right.$
„ undissolved (or insoluble „)	
Nitrogen	
Potash	

Should the analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is bone-meal:—

An ordinary bone-meal will contain about 50 per cent phosphate and about $3\frac{1}{2}$ per cent nitrogen. The units for bone-meal are 1s. 8d. for phosphate and 14s. 6d. for nitrogen. Therefore the value is—

Insol. phosphate, 50 times 1s. 8d., equal to	£4	3	4
Nitrogen, $3\frac{1}{2}$ times 14s. 6d., equal to	2	14	4

Say £6 17 8 per ton.

Suppose the manure is a superphosphate,—say an ordinary superphosphate, with 38 per cent soluble phosphate and 2 per cent insoluble phosphate. It is valued thus:—

Sol. phosphate, 38 times 1s. 10d., equal to, say, £3, 9s. 8d. per ton.
Insoluble phosphate is not valued in a superphosphate.

Note.—The units have reference solely to the MARKET PRICE of Manures, and not to their AGRICULTURAL VALUES.

Thus, in stating the phosphate in bone-meal at 1s. 8d. per unit, and that in steamed bone flour at 1s. 4d., it is meant that these are the prices per unit at which phosphate can be bought in these two manures; but it does not mean that the phosphate in the one is 4d. per unit better as a manure than that in the other. It is probably no better.

BOTANICAL DEPARTMENT

*Consulting Botanist to the Society—A. N. M'ALPINE,
6 Blythswood Square, Glasgow.*

The Society have fixed the following rates of charge for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number in the subjoined schedule. The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed, 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention, 1s.
3. Report on any disease affecting farm crops, 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value, 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seed he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag, in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage paid) must be addressed to Professor M'Alpine, Botanical Laboratory, 6 Blythswood Square, Glasgow.

ENTOMOLOGICAL DEPARTMENT

Consulting Entomologist to the Society—Dr R. STEWART MACDOUGALL,
9 Dryden Place, Edinburgh.

Arrangements have been made with Mr R. Stewart MacDougall, M.A., D.Sc., Edinburgh, to advise members of the Society regarding insects or allied animals which, in any stage of their development, infest—

- | | |
|-----------------------------------|-------------------------------------|
| (a) Farm crops. | (d) Fruit and fruit trees. |
| (b) Stored grain. | (e) Forest trees and stored timber. |
| (c) Garden and greenhouse plants. | (f) Live stock (including poultry). |

Members consulting Dr MacDougall will please forward with their queries examples of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or other animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, to prevent injury in transmission.

Address letters and parcels (carriage or postage paid) to Dr R. Stewart MacDougall, 9 Dryden Place, Edinburgh.

The Directors have fixed the fee payable by members to Dr MacDougall at 1s. for each case upon which he is consulted: this fee must be sent to him along with the application for information.

PREMIUMS

GENERAL REGULATIONS FOR COMPETITORS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, nor circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

CLASS I.

REPORTS.

SECTION 1.—THE SCIENCE AND PRACTICE OF
AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold

Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return and a certified measurement of the ground are requisite.*

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES AND FISHERIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Sovereigns. To be lodged by 1st November in any year.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year.

SECTION 5.—FORESTRY DEPARTMENT.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subaising the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

CLASS II.

DISTRICT COMPETITIONS.

REGULATIONS 1914.

Grants in aid of DISTRICT COMPETITIONS for 1915 must be applied for before 1st November 1914, on Forms to be obtained from the Secretary.

When a Money Grant has expired, the District cannot apply again for another Money Grant for four years.

SECTION I.—GRANTS TO DISTRICT SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to District Societies for prizes for *Breeding Animals* of any of the following Classes of Stock, viz. :—

Cattle.

Shorthorn.
Aberdeen-Angus.
Galloway.
Highland.
Ayrshire.
Jersey.

Sheep.

Blackface.
Cheviot.
Border Leicester.
Half-Bred.
Shropshire.
Oxford-Down.
Suffolk.
Wensleydale.

Horses.

Draught Horses.
Hunters.
Hackneys.
Ponies.
Shetland Ponies.

Swine.

Any Pure Breed.

Cross-bred animals are not eligible. The Prizes must be confined to *Breeding Animals*; “bullocks,” “geldings,” “wethers,” and “hog pigs” are excluded.

2. All Competitions must be at the instance of a local Society. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.

3. GRANT TO DISTRICT, £12.—The portion of the Grant to any one District Society shall not exceed the sum of £12 in any one year.

4. ALLOCATION OF GRANT.—The Grant from the Highland and Agricultural Society is not to be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen; and the Prizes must be announced in the Premium List and Catalogue of the Show as “given by the Highland and Agricultural Society.”

5. **CONTINUANCE OF GRANT THREE YEARS.**—The Money Grant shall continue for three alternate years, provided always that the District Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes. If no competition takes place for two years the Grant expires.

6. When it is agreed to hold the General Show of the Society in any district, no provincial show shall be held in that district in the months of June, July, or August.

7. **MEDALS IN INTERMEDIATE YEARS.**—In the two alternate years the Highland and Agricultural Society will place three Silver Medals at the disposal of the District Societies, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

8. **RULES OF COMPETITION.**—The Rules of Competition for the Premiums, the Funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

9. **AREA AND PARISHES—FIVE PARISHES.**—When making application for Grants from the Highland and Agricultural Society, the District Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no District Society shall be entitled to a Grant whose show is not open to at least five Parishes.

10. **REPORTS.**—Blank Forms for Reports will be furnished to the Secretaries of the different District Societies. Both in the years when the Grant is offered and in the two intermediate years, detailed reports of the competition must be given on these Forms and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than 1st November. These reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked in the Form.

11. **GRANTS—WHEN PAID.**—The Grants made to District Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. *The Secretary of the District Society must not on any condition whatever pay any premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.*

12. **RENEWAL OF APPLICATION.**—No application for renewal of a Money Grant to a District Society will be entertained until the expiration of *four years* from the termination of the last Grant.

13. **DISPOSAL OF APPLICATIONS.**—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those District Societies which have been longest off the list.

DISTRICTS.

1. **NITHSDALE.**—*Convener*, Charles W. Ralston, Dabton, Thornhill; *Secretary*, David Paterson, Solicitor, Thornhill. Granted 1909. (In abeyance in 1910 on account of the Dumfries Show.)

2. **ST MARY'S ISLE ESTATES AND DISTRICT.**—*Convener*, John Wilkinson, The Grange, Kirkcudbright; *Secretary*, John Gibson, Solicitor, Kirkcudbright. Granted 1909. (In abeyance in 1910 on account of the Dumfries Show.)
3. **WIGTOWN.**—*Convener*, Andrew M. Clelland, Glenturk, Wigtown; *Secretary*, Gavin Coupland, Hope Cottage, Wigtown. Granted 1909. (In abeyance in 1910 on account of the Dumfries Show.)
4. **STRATHSPEY.**—*Convener*, J. Grant Smith, Strathspey Estate Office, Grantown-on-Spey; *Secretary*, Wm. Macdonald, Home Farm, Castle Grant, Grantown-on-Spey. Granted 1909. (In abeyance in 1911 on account of the Inverness Show.)
5. **WESTER ROSS.**—*Convener*, William Stirling, Fairburn, Muir of Ord; *Secretary*, James Cumming, County Buildings, Dingwall. Granted 1909. (In abeyance in 1911 on account of the Inverness Show.)
6. **BUCHAN.**—*President*, Lieut.-Colonel Ferguson of Pitfour, Mintlaw; *Secretary*, James A. Smith, Bank House, Strichen. Granted 1910.
7. **INVERURIE.**—*Convener*, Robert Bruce, Heatherwick, Inverurie; *Secretary*, John Strachan, 9 Albert Street, Inverurie. Granted 1910.
8. **STIRLING.**—*Convener*, David F. Stewart, East Carse of Trowan, Crieff; *Secretary*, Andrew C. Buchanan, 26 Port Street, Stirling. Granted 1910.
9. **EAST KILBRIDE.**—*Convener*, John Hamilton, Low Mains, East Kilbride; *Secretary*, William Strang, 24 George Square, Glasgow. Granted 1909. (In abeyance in 1913 on account of the Paisley Show.)
10. **LOWER WARD OF RENFREWSHIRE.**—*Convener*, Lord Inverclyde, Castle Wemyss, Wemyss Bay; *Secretary*, A. Douglas Murray, 2 Church Place, Greenock. Granted 1909. (In abeyance in 1913 on account of the Paisley Show.)
11. **BUTE.**—*Convener*, Colin M'Callum, Kilmichael, Bute; *Secretary*, James Fisher, 5 King Street, Rothesay. Granted 1909. (In abeyance in 1913 on account of the Paisley Show.)
12. **MONKTON, NEWTON, PRESTWICK, AND ST QUIVOX.**—*Convener*, Thos. C. Lindsay, Aitkenbrae, Monkton; *Secretary*, Hugh Boyd, jun., 57 Main Street, Prestwick. Granted 1908. (In abeyance in 1909—no competition. In abeyance in 1913 on account of the Paisley Show.)
13. **STRATHBOGIE.**—*Convener*, Wm. Wilson, Coynachie, Gartly; *Secretary*, Wm. M. Morrison, Cairnie, Huntly. Granted 1912.
14. **DOUNE.**—*Convener*, John Scrimgeour, Doune Lodge, Doune; *Secretary*, William Gray, Doune. Granted 1912.
15. **EASTERN DISTRICT OF STIRLINGSHIRE AGRICULTURAL SOCIETY.**—*Convener*, Wm. T. Malcolm, Dunmore, Larbert; *Secretary*, Robert Waugh, Newmarket Street, Falkirk. Granted 1912.
16. **ARGYLL.**—*Convener*, Captain John Campbell of Kilberry; *Secretary*, James M'Dougall, South Cliff, Tarbert, Lochfyne. Granted 1910. (In abeyance in 1910—unable to hold a show. In abeyance in 1913 on account of the Paisley Show.)
17. **LARGS, CUMBAR, AND WEMYSS BAY.**—*Convener*, J. W. Crawford, Kilburn, Largs; *Secretary*, Neil Mitchell, 1 Gallowgate Square, Largs. Granted 1911. (In abeyance in 1913 on account of the Paisley Show.)
18. **YTHANSIDE FARMERS' CLUB.**—*Convener*, Wm. Davidson, The Square, Ellon; *Secretary*, Francis Gellie, Market Street, Ellon. Granted 1914.
19. **ARDOCH.**—*Convener*, Robert Miller, Overardoch, Braes; *Secretary*, John Maxton, Rhynd, Braes, Perthshire. Granted 1914.

20. **EASTER ROSS.**—*Convener*, James G. Young, Cadboll, Fearn ; *Secretary*, Geo. D. Gill, Commercial Bank Buildings, Tain. Granted 1914.
21. **KILLEARN.**—*Convener*, Robert Buchanan, Blairquhosh and Westerton, Killearn ; *Secretary*, Robert N. Morrison, Corrievew, Balfron, Stirlingshire. Granted 1914.
22. **CLACKMANNANSHIRE UNION.**—*Convener*, John Fisher, Jellyholm, Alloa ; *Secretary*, Alex. L. Roxburgh, Solicitor, Alloa. Granted 1911.
23. **MOFFAT AND UPPER ANNANDALE.**—*Convener*, Basil H. Hill, Archbank, Moffat ; *Secretaries*, James Johnstone, Solicitor, Moffat, and John Young, High Street, Moffat. Granted 1911.
24. **UNITED EAST LOTHIAN.**—*Convener*, Thomas Elder, Stevenson Mains, Haddington ; *Secretary*, John Stirling, Solicitor, Haddington. Granted 1911.
25. **GLENKENS.**—*Convener*, J. M. Kennedy, Knocknalling, Dalry ; *Secretary*, James M'Gill, High Street, New Galloway. Granted 1911.
26. **STRATHENDRICK.**—*Convener and Secretary*, W. Watson Murray, Catter House, Drymen. Granted 1911.
27. **CASTLE DOUGLAS.**—*Convener*, Chas. A. Phillips of Dildawn, Castle Douglas ; *Secretary*, Patrick Gifford, 118 King Street, Castle Douglas. Granted 1912. (In abeyance in 1912—no Show.)
28. **FORMARTINE.**—*Convener*, George Walker, Tillygreig, Udney Station ; *Secretary*, James Skinner, Mosstown Cottage, Logierieve, Udney. Granted 1913.
29. **GIRVAN.**—*Convener*, William Bone, Shalloch Park, Girvan ; *Secretary*, Andrew Dunlop, Royal Bank, Girvan. Granted 1910. (In abeyance in 1913 on account of the Paisley Show.)
30. **ISLAY, JURA, AND COLONSAY.**—*Convener*, James Forbes, Eallabus, Bridgend, Islay ; *Secretary*, Robert Cullen, Bridgend, Islay. Granted 1912. (In abeyance in 1913 on account of the Paisley Show.)
31. **LIDDESDALE.**—*Convener*, David Ballantyne, Shaws, Newcastleton ; *Secretary*, Robert Brown, British Linen Bank, Newcastleton. Granted 1913. (In abeyance in 1914 on account of the Hawick Show.)
32. **YARROW AND ETTRICK PASTORAL.**—*Convener*, Walter Barrie, Sundhope, Selkirk ; *Joint-Secretaries*, Walter Barrie and John Johnstone, Sundhope, Selkirk. Granted 1913. (In abeyance in 1914 on account of the Hawick Show.)

In 1914.

Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are in competition for the last year.

Nos. 13, 14, 15, 16, and 17 are in competition for the second year.

Nos. 18, 19, 20, and 21 are in competition for the first year.

Nos. 22, 23, 24, 25, 26, 27, 28, 29, and 30 compete for local Premiums. (See Rule 7.)

Nos. 31 and 32 are in abeyance on account of the Hawick Show.

SECTION 2.—GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year.

3. The Grant will be available only for Stallions which, for the year to which the Grant applies, are Registered in the Register of Certified Draught Stallions published by the Board of Agriculture. (For information regarding the Registration of Stallions, apply to the Secretary of the Board of Agriculture, 4 Whitehall Place, London, S.W.) See note, p. 49.

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. RULES 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Section 1, shall be applicable to this Section.

DISTRICTS.

1. DUNBLANE, DOUNE, AND CALLANDER.—*Convener*, James Paterson, Burnbank, Blair-Drummond; *Secretary*, W. D. M'Laren, Drummore, Doune. Granted 1910.
2. STIRLING.—*Convener*, James Rodger, Keir Mains, Dunblane; *Secretary*, Robert Paterson, Hill of Drip, Stirling. Granted 1910.
3. WEST OF FIFE.—*Convener*, R. Jeffrey, Drumfin, Torryburn, Inverkeithing; *Secretary*, James Millar, Waulkmill, Charleston. Granted 1910.
- *4. DUMBARTONSHIRE.—*Convener*, Alex. Y. Allan, Aitkenbar Farm, Dumbarton; *Secretary*, William Davie, 253 Main Street, Alexandria. Granted 1912.
- *5. KINROSS-SHIRE.—*Convener*, Colonel Porteous of Turfhill, Kinross; *Secretary*, John A. Hepburn, M.R.C.V.S., Ordmohr, Milnathort. Granted 1912.
- *6. LOWER WARD OF RENFREWSHIRE.—*Convener*, Peter M'Aulay, Bow Farm, Greenock; *Secretary*, James Mathie, Coves Farm, Gourrock. Granted 1912. (£15 not paid in 1912.)
- *7. AIRD AND STRATHGLASS.—*Convener*, R. A. Smith, Wester Lovat, Beaulay; *Secretary*, Simon Fraser, Moniack, Kirkhill. Granted 1912. (£15 not paid in 1912.)
- *8. CROMAR AND UPPER DEESIDE.—*Convener*, Patrick Strachan, East Town, Tarland; *Secretary*, Wm. Anderson, Hopewell, Tarland. Granted 1914.
- *9. CUMBERNAULD, KILSYTH, AND KIRKINTILLOCH.—*Convener*, Alexander Whitelaw, Gartshore, Kirkintilloch; *Secretary*, Alex. Park, 175 Hope Street, Glasgow. Granted 1914.

- *10. UPPER NITHSDALE.—*Convener*, Charles W. Ralston, Dabton, Thornhill ; *Secretary*, D. Paterson, Solicitor, Thornhill. Granted 1914.
- *11. SCONE, STRATHORD, AND MURTHLY.—*Convener*, W. S. Ferguson, Pictstonhill, Perth ; *Secretary*, James Stewart, Friarton, Perth. Granted 1914.
- 12. VALE OF ALFORD.—*Convener*, W. A. Mitchell, Auchnagathle, Keig ; *Secretary*, John Reid, Morraltrie, Alford. Granted 1911.
- 13. LOCKERBIE.—*Convener*, John M. Aitken, Norwood, Lockerbie ; *Secretary*, J. R. Byers, Royal Bank Buildings, Lockerbie. Granted 1911.
- 14. PERTH AND COUPAR-ANGUS.—*Convener*, W. S. Ferguson, Pictstonhill, Perth ; *Secretary*, James Stewart, Friarton, Perth. Granted 1911.
- 15. NEWTON-STEWART.—*Convener and Secretary*, John M'Conchie, Mossyard, Gatehouse. Granted 1911.
- *16. DEESIDE.—*Convener*, Sir Thomas Burnett of Leys, Bart., Crathes Castle ; *Secretary*, John Cooper, Ley, Banchory. Granted 1913.
- *17. EAST OF FIFE.—*Convener*, Colonel Purvis, Kinaldy, Stravithie ; *Secretary*, James Cairns, Abercrombie, St Monance. Granted 1913. (£15 not paid in 1913.)

Note.—Rule No. 3 applies to Societies marked *.

In 1914.

Nos. 1, 2, and 3 are in competition for the last year.

Nos. 4, 5, 6, and 7 are in competition for the second year.

Nos. 8, 9, 10, and 11 are in competition for the first year.

Nos. 12, 13, 14, 15, 16, and 17 compete for local premiums. (See Rule 4.)

SPECIAL GRANTS.

- £40 to the Highland Home Industries Association.—*Secretary*, Miss Jessie D. C. Ross, Riverfield, Inverness. Granted 1895. (Did not hold a competition in 1899, 1900, or 1908.)
- £20 to the Ayrshire Agricultural Association, to be competed for at the Dairy Produce Show at Kilmarnock.—*Convener*, James Middleton, Estate Office, Braehead, Kilmarnock ; *Secretary*, John Howie, 58 Alloway Street, Ayr. Granted 1872.
- £25 to Shetland Agricultural Society.—*Convener*, J. M. Goudie, Lerwick ; *Secretary*, James J. Brown, Lerwick. Granted 1893.
- Ross-shire Crofters' Show.—*Convener*, T. W. Cuthbert, Achindunie, Alness ; *Secretary*, Hector Ross, Banker, Alness. Granted 1910 for 3 alternate years, and 2 Silver Medals in the 2 intermediate years, which may be awarded to animals of any pure breed or cross. Medals in 1914.
- £3 to West Mainland, Orkney.—*Convener*, James Walker, Pow, Sandwick ; *Secretary*, J. M. H. Robertson, Lyking, Sandwick, Orkney. Granted 1900.
- £3 to Rousay, Orkney.—*Convener*, H. H. Horne, Trumland Farm, Rousay, Orkney ; *Secretary*, Allan Gibson, Myres, Sourin, Rousay. Granted 1903.
- £3 to South Ronaldshay and Burray, Orkney.—*Convener*, Arch. Allan, St Margaret's Hope, Orkney ; *Joint-Secretaries*, William Cromarty, Widewall House, and Robert Cromarty, Sandwick House, St Margaret's Hope, Orkney. Granted 1904.

- The British Dairymaids' Association.**—*Convener*, J. H. R. Turnbull, 7 W. Maitland Street, Edinburgh; *Secretary*, Miss J. Barbour, N.D.D., Levenhall, Musselburgh. 1 Minor Gold Medal and 1 Medium Silver Medal for Champion Butter-making Competitions. Granted 1908.
- £3 to Unst, Shetland.—*Convener*, Alexander M. Sandison, Moundeville, Uyeasound, Shetland; *Secretary*, Mountford A. White, Belmont, Unst. Granted 1911 for 3 alternate years. (In abeyance 1914.)
- £3 to Orkney.—*Convener*, James Johnston, Orphir House, Orphir, Orkney; *Secretary*, D. B. Peace, jun., Auctioneer, Kirkwall. Granted 1883. (In abeyance 1914.)
- £3 to East Mainland, Orkney.—*Convener and Secretary*, John Clouston, Graemeshall, Holm, by Kirkwall. Granted 1898. (In abeyance 1914.)
- £3 to Sanday, Orkney.—*Convener*, W. Cowper Ward, Scar House, Sanday, Orkney; *Secretary*, James Irvine, Stove Farm, Sanday, Orkney. Granted 1902. (In abeyance 1914.)
- Central Aberdeenshire Hoeing Association.—Silver Medal to be awarded at Hoeing Competition in June.

MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

The Society, being anxious to co-operate with local Associations, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts, for—

1. Best Bull, Cow, or Heifer of any pure breed included in Section 1.
2. Best Stallion, or Mare of any pure breed included in Section 1.
3. Best Tup, or Pen of Ewes of any pure breed included in Section 1.
4. Best Boar, Sow, or Breeding-Pig of any pure breed.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.
9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.
12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best Fresh Butter.
15. Best collection of Roots.
16. Best kept Fences.
17. Male Farm Servant who has been longest in the same service, and who has proved himself most efficient in his duties, and to have invariably treated the animals under his charge with kindness.
18. Female Servant in charge of Dairy and Poultry who has been longest in the same service, and who has proved herself most efficient in her duties, and to have invariably treated the animals under her charge with kindness.
19. Best Sheep-Shearer.
20. Most expert Hedge-Cutter.
21. Most expert Labourer at Draining.
22. Best Maker of Oat-Cakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

The Medals are granted for two years, and lapse if not awarded in those years.

No Society shall receive more than two Medals for two years.

Aberdeenshire.

1. DEESIDE UNION SHOW.—*Convener*, Sir Thomas Burnett, Bart. of Leys, Crathes Castle; *Secretary*, John Cooper, Ley, Banchory. 2 Medals. 1913.
2. GARIOCH FARMER CLUB.—*Convener*, Captain A. T. Gordon of Newton, Inch; *Secretary*, John Anderson, Commercial Bank, Inch. 2 Medals. 1914.
3. MARNOC AND CORNHILL.—*Convener*, James Andrew, Kinnairdy Castle, Bridge of Marnoch; *Secretary*, David Findlay, Bank Agent, Aberchirder. 2 Medals. 1914.
4. MONQUHITTER.—*Convener*, William Norrie, Cairnhill, Monquhitter; *Secretary*, William Smith, Thornhill, Monquhitter. 2 Medals. 1913.
5. NEW DEER.—*Convener*, David M. Godsman, Mains of Feddernabe, Brucklay; *Secretary*, A. Stewart, 25 High Street, New Deer. 2 Medals. 1914.

Argyllshire.

6. MULL AND MORVERN.—*Convener*, J. H. Munro Mackenzie of Calgary, Mull; *Secretary*, Alex. J. Fraser, Clydesdale Bank, Tobermory. 2 Medals. 1913.
7. NETHER LORN.—*Convener*, John Gillies, Balmacarry, Kilninver, Oban; *Secretary*, Donald M'Innes, Kilbrandon Estate Office, by Oban. 2 Medals. 1913.

Ayrshire.

8. DALRY FARMERS.—*Convener*, And. C. Patrick, Greenbank, Dalry; *Secretary*, James Allan, West Kirkland, Dalry. 2 Medals. 1914.

Banffshire.

9. NORTHERN SEEDS AND ROOTS ASSOCIATION.—*Convener*, George Smith, Ordens, Boyndie, Banff; *Secretary*, James Young, 28 Seafield Street, Portsoy. 2 Medals. 1914.

Caithness.

10. CAITHNESS.—*Convener*, D. P. Henderson of Stemster, Halkirk; *Secretary*, George Harrold, Accountant, Wick. 2 Medals. 1914.

Dumbartonshire.

11. CUMBERNAULD.—*Convener*, John Hay, Easter Dullatur, Dullatur; *Secretaries*, H. B. Henderson and John Longwill, Roadside, Cumbernauld. 2 Medals. 1914.

Dumfriesshire.

12. DUMFRIES.—*Convener*, M. S. M'Kerrow, Burnock, Dumfries; *Secretary*, John Mackenzie, North Bank Buildings, Dumfries. 2 Medals. 1913.
13. SANQUHAR.—*Convener*, James Moffat, Gateside, Sanquhar; *Secretary*, Jno. Murray, British Linen Bank Buildings, Sanquhar. 2 Medals. 1914.

Fifeshire.

14. FIFE.—*Convener*, David Ferrie, Parbroath, Cupar; *Secretary*, F. W. Christie, Eden View, Cupar-Fife. 2 Medals. 1914.

Lanarkshire.

15. SHETTLESTON AND CHRYSTON.—*Convener*, R. Chapman of Johnstone, Gartosh; *Secretary*, John Watson, 24 St Vincent Place, Glasgow. 2 Medals. 1913.

Perthshire.

16. MOULIN.—*Convener and Secretary*, Robert M'Gillewie, Dunkeld. 2 Medals. 1913.

Renfrewshire.

17. MEARNS.—*Convener*, Alex. Harvie, Shieldhill, Mearns; *Secretary*, Robert C. Pollock, Union Bank, Barrhead. 2 Medals. 1913.
18. RENFREWSHIRE.—*Convener*, Sir Hugh Shaw Stewart, Bart. of Ardgowan, Greenock; *Secretary*, W. G. MacDougall, 94 High Street, Paisley. 2 Medals. 1914.

Applications from other Districts must be lodged with the Secretary of the Society by 1st November next.

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.
2. The classes for which Medals are granted must be in accordance with the list at page 50. The Committee shall select the classes, and specify them in the Report.
3. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.
4. The Money Premiums given in the District must be not less than £2 for each Medal claimed.
5. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.
6. There must not be fewer than three competitors in all the classes.
7. Regarding Reports, despatch of Medals, and application for renewal of Grant, Rules 10 and 11, Section I., will apply.
8. When a grant of Medals has expired, the District cannot apply again for Medals for two years.

PLOUGHING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application :—

FORM OF REPORT.

I, _____ of _____, Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the _____ Association at _____ in the county of _____ on the _____ when _____ ploughs competed ; _____ of land were assigned to each, and _____ hours were allowed for the execution of the work. The sum of £ _____ was awarded in the following proportions, viz. :—

[Here enumerate the names and designations of successful Competitors.]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, 3 George IV. Bridge, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match ; and a Ploughman cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve ploughs in Competition, and not less than Three Pounds awarded in Prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The Local Committee or Society may, if they desire, arrange to let each ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall ploughmen receive any other assistance, and their work must not be set up nor touched by others. Attention should be given to the firmness and sufficiency of the work below more than to its neatness above the surface.

8. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than ten hours per imperial acre on light land, and fourteen hours on heavy or stony land.

LONG SERVICE CERTIFICATES AND MEDALS.

Certificates and Medals for long service are awarded by the Society to farm servants, male or female, having an approved service of not less than thirty years—(a) with one employer on the same or different holdings ; (b) on the same holding with different employers. These Certificates and Medals will be issued as applications are received. After the end of the present year (1914) all applications will be considered in December of each year.

Forms to be obtained from the Secretary.

CLASS III.

COTTAGES AND GARDENS.

The following Premiums are offered for Competition in the Parishes after mentioned.

The Premiums are granted for two years.

PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1. Best kept Cottage	.	.	.	.	.	£1	0	0
Second best	.	.	.	.	.	0	10	0
2. Best kept Cottage Garden	.	.	.	.	.	1	0	0
Second best	.	.	.	.	.	0	10	0

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It is left to the Committee of the District to regulate the maximum annual rent of the Cottages, which may, with the garden, be from £5 to £7.

4. To warrant the award of full Premiums, there must not be fewer than three competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society on or before the 1st November next.

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Parishes desirous of these Premiums must lodge applications with the Secretary on or before the 1st November next.

(No Money Grants offered in 1914.)

MEDALS FOR COTTAGES AND GARDENS OR GARDEN PRODUCE, POULTRY, AND BEE-KEEPING.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections:—*

(1) Best kept Cottage or best kept Cottage and Garden. (One Medal only.)

(2) Best kept Garden. (One Medal only.)

(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)

(4) Best Pen of Poultry.

(5) Honey. (One Medal only.)

3. The annual value of each Cottage, with the ground occupied in the parish by a Competitor, must not exceed £15. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Blank forms for Reports of Competitions will be furnished to the Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than *1st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. When a grant of Medals has expired, the District cannot apply again for aid for two years, and if no competition takes place in a District for two years the grant expires.

9. Applications for these Medals must be made *before 1st November next*.

Aberdeenshire.

1. CRUDEN.—*Convener*, Robert Brand, Ardiffery, Hatton, R.S.O., Aberdeen; *Secretary*, John Robb, Hatton, R.S.O., Aberdeen. 2 Medals 1913.

2. KINELLAR HORTICULTURAL AND POULTRY.—*Convener*, W. S. Cantlay, Glasgoego Cottage, Kinellar; *Secretary*, Neil Smith, Kinellar. 2 Medals. 1914.

Fifeshire.

3. DYSART PARISH.—*Convener*, Wm. Smith Lesslie, Banchory, Kirkcaldy; *Secretary*, William Murray, 92 Salisbury Street, Kirkcaldy. 2 Medals. 1913.

Renfrewshire.

4. INVERKIP, WEMYSS BAY, AND SKELMORLIE.—*Convener and Secretary*, Robert H. Hamilton, Clydesdale Bank, Skelmorlie. 2 Medals. 1914.

SECOND EDITION.]

NOTE.—From 8th till 16th July all communications should be addressed to “The Secretary, Secretary’s Office, Showyard, Hawick.”

*Address for Telegrams—“SOCIETY,” EDINBURGH.
Telephone No.—CENTRAL 3655.*

Subject to Orders issued by the Board of Agriculture

**HIGHLAND AND AGRICULTURAL SOCIETY
OF SCOTLAND**

**GENERAL SHOW OF STOCK AND IMPLEMENTS
HAWICK**

14TH, 15TH, 16TH, AND 17TH JULY 1914.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 11th May.

HORSES, CATTLE, SHEEP, AND SWINE—Friday, 5th June.

POULTRY, DAIRY PRODUCE, AND WOOL (separate Forms)—Friday, 5th June.

No Entry at ordinary fees taken later than those which are received at the Society’s Office, Edinburgh, by first post, or 10 o’clock, on Friday morning (5th June). Late Entries for Cattle, Horses, Sheep, and Swine taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, and Wool at double fees) till Wednesday morning (10th June) at the Society’s Office, Edinburgh, at 10 o’clock.

President of the Society.

THE RIGHT HON. THE EARL OF DALKEITH.

Chairman of the Board of Directors.

CHARLES DOUGLAS, D.Sc., OF AUCHLOCHAN.

Convener of the Local Committee.

C. H. SCOTT PLUMMER OF SUNDERLAND HALL.

The District connected with the Show comprises the Counties of Berwick, Peebles, Roxburgh, and Selkirk.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated in the Premium List, is open to Exhibitors from all parts of the United Kingdom.
- Entries.* 2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday, 11th May, for Implements and other Articles, and Friday, 5th June, for Stock, Poultry, and Dairy Produce.* No Entry taken at ordinary fees later than those which are received at the Society's Office by first post, or 10 o'clock, on Friday morning, 5th June. Late Entries for Cattle, Horses, Sheep, and Swine taken on payment of 10s. additional for each entry (Poultry and Dairy Produce at double fees) till Wednesday morning (10th June), at the Society's Office, Edinburgh, at 10 o'clock. Printed forms of Entry will be issued on application to the Secretary, No. 3 George IV. Bridge, Edinburgh. Admission Orders for Exhibits and Attendants will be forwarded to Exhibitors, by post, previous to the Show.
- Licences for moving Stock.* 3. This Premium List is published and the Show will be held subject to any Orders that may be issued by the Board of Agriculture or Local Authorities. Any licences that may be required for the movement of Stock into or away from the Show must be obtained by Exhibitors. For these licences, application should be made to the Chief Constable, Constabulary Office, Hawick.
- Diseased Animals.* 4. Animals suffering from any form of infectious or contagious disease—including ringworm or other form of infectious or contagious skin ailment—must not be brought to the Show. Those infringing this Rule shall be liable to a fine of 40s., and to have their Stock removed.
5. No Entry can be received or recorded unless it is accompanied by the necessary fees, and complies fully with the Regulations in the Premium List, the Secretary being empowered to return entries sent without the necessary fees.
- Particulars of Entries.* 6. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry.
7. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown.
- No substitution of Animals.* 8. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to them, and cannot be withdrawn after entry, or other animals be substituted in their place.
- One Class only.* 9. For prizes given by the Society, no animal shall be allowed to compete in more than one class, or to compete in any class except that prescribed for animals of its pedigree and description; but this Rule does not apply to the Jumping and Harness Classes.
- Ownership.* 10. All stock exhibited at the Show, except where otherwise stated in the Premium List, must be, at the time of entry, the *bona fide* property of the Exhibitor in whose name it is entered.
- Responsibility for Entries.* 11. Exhibitors are alone responsible for the accuracy and eligibility of their entries. The recording of an entry or the admission of the exhibit to the Showyard will not relieve the Exhibitor of this responsibility. The entry-fee paid for an animal entered in a class for which it is not eligible is not returnable.

12. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, Implements, or other articles may sustain at the Show, or in transit. *liable.*

13. The Society reserve to themselves the right of refusing, cancelling, or prohibiting the exhibition of entries from any person who, after 1st January 1904, has been expelled from the membership of any Agricultural or Dairy Society, or who may have been prohibited, suspended, or disqualified from making entries or exhibiting at the Show or Shows of any Agricultural or Dairy Society or Breed Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, or who is under exclusion from any Breed Society for fraudulent practices. *Disqualified Exhibitors.*

14. When an animal has previously been disqualified by the decision of any Agricultural or Breed Society in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity. *Animal Disqualified.*

15. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal may be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit. *Tampering with Animals.*

16. The Society further reserve to themselves the right of refusing any entries they may think fit to exclude, or to cancel any entry made, or to prohibit the exhibition of any entry. *Rejecting Entries.*

17. Stock entered for competition, and actually in the Show, is subject to the control and under the orders of the Stewards, Secretary, and other Show officials of the Society, and such stock may not be withdrawn from competition without the consent of the Stewards or Secretary. *Control of Exhibits.*

18. Persons making insulting remarks to, or in any way unduly interfering with, the Judges, Stewards, or other officials while in the performance of their duties, and all Exhibitors or others in charge of stock while in the judging rings refusing to accept or display tickets, rosettes, &c., awarded by the Judges, and handed to them by the Stewards or other officials, or tearing up tickets, rosettes, &c., so awarded and handed to them, or indulging in any similar conduct, shall be considered guilty of misconduct, and shall be dealt with under these rules. *Improper Conduct.*

19. All persons in charge of stock or other exhibits, and all persons admitted into the Showyard, shall be subject to the rules of the Society, and shall obey the orders of the Stewards, Secretary, and other officials of the Society. Exhibitors shall be answerable for the conduct of their servants or representatives. *Subject to Orders.*

20. The Stewards and other officials have power to enforce the regulations of the Society in their different departments. *Power of Officials.*

21. A protest having reference to exhibits at the Show may be lodged by any person having interest. Protests having reference to competitions which take place on the first day of the Show must be lodged in writing with the Secretary at his Office in the Showyard not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Secretary's Office in the Showyard at 9.30 A.M. that day, when protests may be disposed of. Protests relating to competitions taking place after the first day of the Show must be lodged before 5 P.M. on the day on which the particular exhibition takes place. Each protest must state specifically the grounds of objection, and must be accompanied by a deposit of £2, 2s., which deposit may, if the objection be proved frivolous to the satisfaction of the Directors, be forfeited. Protests may be lodged at any time by Directors, *Protests.*

and in this case no deposit will be required. Protests will be heard and determined by the Directors. Protests on veterinary grounds not received.

*Penalties
for
Offences.*

22. The violation of any one of the regulations, or disobedience of the orders of the Directors, Stewards, Secretary, or other officials of the Society, shall render the offending person liable to the forfeiture of all premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be expelled from the membership of the Society, and disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society, or to have his case disposed of by fine or otherwise as the Directors may determine.

*Final
Authority.*

23. The decision of the Directors shall, in every matter arising at or in connection with the Show, be final; and every person present at the Show, whether as a Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have agreed to refer the subject-matter of such decision to the final determination of the Directors to the exclusion of all Courts of Law.

*Intimating
Decisions.*

24. All decisions under these rules may, along with the names and addresses of the persons against whom such decisions have been pronounced, be communicated by the Secretary of this Society to the Secretaries of all Agricultural or Dairy Societies holding open Shows in the United Kingdom, and to the Secretaries of all Breed Societies in the United Kingdom, and may be published in the Annual Reports of this Society, and in such newspapers or journals as the Directors may determine; and every Exhibitor competing at the Show, and every person present at the Show, whether as a Director, Member of Committee, Steward, Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have consented to such communication and publication.

*Former
Winners.*

25. An animal to which a first Premium has been awarded, even if it should not qualify for that Premium, or an animal which subsequently becomes entitled to a first Premium, at a General Show of the Society, cannot again compete in the same class, notwithstanding any alteration in the heights stated for such class, but may be exhibited as Extra Stock.

*Herd-
books.*

26. Shorthorn, Aberdeen-Angus, Galloway, and Highland cattle must be entered in the herd-books—Ayrshire Cattle in the herd-book or any Appendices thereto—or the Exhibitor must produce evidence that his animal is eligible to be entered therein.

*Height of
Horses.*

27. All Horses or Ponies entered in classes in which a particular height is stated shall before being judged be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted.

*Weight of
Shoes.*

28. Exhibitors of Hackney and Harness Horses shall be required to adhere to the Rules and Regulations of the Hackney Horse Society with regard to the weight of shoes on their exhibits, the Society's Veterinary Inspector being instructed to examine all the Hackneys and Harness Horses on the opening morning of the Show, and see that the following Rules as to the weight of shoes are attended to—viz., (a) For Hackneys exceeding 14 hands (except Hackney yearling colts and Hackney yearling fillies), no shoe (nails included) may exceed 2 lb. in weight; (b) for Ponies not exceeding 14 hands, Hackney yearling colts and Hackney yearling fillies, no shoe (nails included) may exceed 1½ lb. in weight.

*Overfeed-
ing.*

29. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which after the age of twelve months have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Sires.

30. Aged Bulls and Stallions must have had produce, and, along with two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the twelve months immediately preceding the Show.

Cows.

31. Except as may be otherwise specially provided in this Premium List, cows of all breeds (other than Ayrshire) must have had a calf within

nine months previous to the Show, and when exhibited must be in milk. Cows of the Ayrshire breed must have had a calf within fifteen months previous to the Show. Animals of any age that have had a calf must be shown as Cows.

32. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, and Gal-loway breeds, two-year-old Yeld Ayrshire Heifers, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within nine months after the Show. *In-calf Heifers.*

33. A Mare entered in a class for "Mares with foal at foot" must have produced a foal after 1st January of the year of the Show, must have regularly nursed her own or another foal, and must have the foal with her in the Show. If the mare's own foal is alive it must be the foal shown with the mare. In the case of a Mare that has not foaled before the Show, or whose foal has died, she shall, if not in milk, be eligible without further entry to compete among the Yeld Mares if a corresponding class for Yeld Mares be included in the Premium List. Agricultural Yeld Mares must produce a foal within twelve months from the first day of the Show. A Mare in a class for "Mares or Geldings" may or may not have had a foal in the year of the Show, but shall not have her foal exhibited with her, nor be in milk at the time of the Show. *Mares.*

34. All Sows farrowed prior to the year before the Show must have produced a litter of pigs in the year of the Show before the opening day. Sows farrowed in the year prior to the year of the Show must either have produced a litter of pigs before the Show, or produce a litter within three months of the last day of the Show. Certificates of the date of farrowing must be supplied in every case. *Sows.*

35. With reference to Regulation 32, birth of a live or full-time calf must be certified; and in regard to Regulation 33, birth of at least a nine months' foal; or in the case of the death of the dam, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a calf or foal within the periods stated in Rules 32 and 33. Certificates required by the foregoing Regulations will be issued after the Show, and must reach the office of the Secretary as follows: calving certificates within ten months, farrowing certificates within four months, and foaling certificates within thirteen months, of the last day of the Show. In default of this, the animal will be regarded as having failed to fulfil the Regulations, and the prize will therefore pass to the animal next in order of merit or be forfeited. *Calves and Foals.*

36. Except when otherwise provided, the awards of Special Prizes shall not be subject to the Regulations as to calving and foaling. *Special Prizes.*

37. The Premiums awarded, except those withheld till birth of calf or foal or litter of pigs is certified, will be paid as soon after the Show as practicable, and, with the exception of the Tweeddale Gold Medal, Special Cups, and Medals, may be taken either in money or in plate. *Payment of Prizes.*

38. In the classes for Hunters, Judges are empowered to transfer to the proper classes horses which, in regard to weight-carrying, are in their opinion entered in the wrong classes. *Hunters.*

39. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving Prizes to animals showing symptoms of hereditary disease. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. Private accommodation is provided for the examination of horses by the Veterinary Surgeon. No protests on veterinary grounds will be received. *Soundness of Horses.*

40. All Ewes must have reared lambs in the year of the Show; and Ewes of the Blackface and Cheviot breeds must be in milk, and have their lambs at foot. *Accommodation for examination. Ewes.*

- Milking.* 40A. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him.
- Clipping.* 41. Sheep must have been clipt bare after the first day of the November preceding the Show, no part of the animal to be clipt prior to that date—this Rule not to apply to Cheviot Sheep.
- Colouring Blackface Sheep.* 42. The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface Sheep which he considers unnaturally coloured or when the fleece has been dealt with by the use of foreign substances.
- Poultry.* 43. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.
- Railway Passes.* 44. Railway Certificates for Stock and Implements are issued to Exhibitors before the Show along with their Tickets of Admission, one Certificate for the outward and another for the return journey being sufficient for each Exhibitor for any number of exhibits.
- Admission of Stock.* 45. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered in classes for which other times for arrival are elsewhere stated in this List. Judging begins at 9.30 A.M. on Tuesday. Exhibited on Tuesday, Wednesday, Thursday, and Friday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary's Office in the Showyard.
- Parades.* 46. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. In Parade, Horses must be ridden or led as provided in their respective classes. Prize and commended Cattle and Horses will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *twenty minutes before the hour of Parade*, and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s. for each separate infringement or act of disobedience, and to the forfeiture of any or all of the Prizes awarded to him at this Show.
- Responsibility of Exhibitors.* 47. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.
- Moving from stalls.* 48. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary.
- Washing Cattle.* 49. Cattle shall not be taken out of their stalls to be washed after the Judging has been commenced. Cattle must not be washed beside the Judging Rings. Those infringing this Rule shall be liable to a fine of 10s.
- Soaping prohibited.* 50. Soap or other adhesive material must not be used in dressing cattle or horses. Infringement of this Rule will render the animal upon which the material is used liable to be disqualified.
- Accommodation.* 51. Loose-boxes will be provided for all horses; covered accommodation for other live stock. Boxes (floored) for attendants on Cattle, Horses, Sheep, and Pigs will be provided at a charge of 20s. for each box for members; 25s. for non-members. (See Rule 76.)
- Floored boxes and stalls for Animals.* 52. Exhibitors requiring the boxes, stalls, or pens for their animals to be floored must give instructions, stating the Catalogue No., to the Showyard contractors, Messrs Macandrew & Co., Showyard, ten days before the Show opens. (For charges, see Rule 75.)

53. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle, other than Highland Cattle, must be tied in their stalls. *Securing Cattle.*

54. During the time the Show is open to the public no rug shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of that department. *Concealing Animals.*

55. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. The Forage-yard will close at 3.30 p.m. on Friday, the last supply to be given to attendants then; and if any extra supply is required on account of stock remaining in the Yard after the close of the Show, notice must be given to the Forage Steward not later than 5 o'clock on Thursday. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not grass, tares, hay, or straw. Coops, food, and attendance for Poultry will be provided by the Society. *Fodder.*

56. Servants in charge of Stock must bring their own buckets or pails, and a piece of rope or sheep-net to carry their forage. Mangers, and sheep and pig troughs, will be provided. *Feeding appliances.*

57. Sawdust must not be used as bedding for Stock. *Sawdust.*

58. As the command of water in the Yard is limited, it is particularly requested that waste be avoided. *Water.*

59. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s. *Lights and Smoking.*

60. Stock or Poultry cannot be removed from the Yard till 5 p.m. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department or the Secretary. *Removal of Stock.*

61. At the close of the Show on Tuesday, Wednesday, and Thursday, horses may be withdrawn for the night on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Secretary's Office between 5 and 6 p.m. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday. *Withdrawal of horses over-night.*

62. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and to be detained till all the other Stock is removed. *Order in removal.*

63. Poultry may be penned before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Poultry, the birds will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits. *Penning and removing Poultry.*

64. On the opening day of the Show the Poultry Shed will be closed to the public during the Judging. On the last day of the Show the Poultry Shed will be closed to the public at 4 p.m.; at 5 p.m. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, not later than 11 a.m. on the last day of the Show, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Poultry Shed at 5 p.m. to remove the birds. *Closing of Poultry Shed.*

JUDGING STOCK AND POULTRY.

- Opening Gates.* 65. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.
- Judging.* 66. The Judges will commence their inspection at 9.30 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment shall be permitted.
- Insufficient merit.* 67. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a class, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize.
- Commendations.* 68. In addition to the Premiums, the Judges may award one Very Highly Commended, one Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.
- Ayrshire Cows and Heifers.* 69. Ayrshire Cows which have not calved before the Show, whether entered in a class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire Cows or Heifers which have calved before the Show—in whichever of the classes entered—shall be judged along with Cows in Milk.
- Attending Members' duties.* 70. Attending Members will accompany each section of the Judges. It will be the duty of Attending Members to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of the prize animals to the Award Lectern near the Secretary's Office; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.
71. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or attending Member in any class in which he is competing.

DAIRY PRODUCE.

72. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.
- Placing and removing Dairy Produce.* 73. Dairy Produce must have been made on the Exhibitor's farm in the year of the Show. No Exhibitor shall show more than one lot in each class. Exhibits of Dairy Produce may be placed before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor a person with written authority from the Exhibitor being present to place or remove exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective Exhibitors.

STALL RENT (INCLUDING ENTRY FEE).

- Stall Rent.* 74. The Stall Rents (which include Entry Fees) as stated opposite the individual Classes in this List, shall be paid by Exhibitors when making their Entries. The Secretary is instructed to return entries sent without the necessary fees.

FLOORED BOXES AND STALLS.

75. Exhibitors desiring the boxes, stalls, or pens for their animals to be floored can have this done by giving instructions, stating the Catalogue No., ten days before the opening of the Show, to the contractors, Messrs Macandrew & Co., the Showyard, to whom the following charges for flooring have to be paid: Horses, 10s. each; Ponies, Cattle, Sheep, and Swine, 7s. each. *Floored Stalls.*

ACCOMMODATION FOR ATTENDANTS.

76. Boxes for accommodation of attendants on Stock will, if desired, be provided beside the Stock at a charge of 20s. per box for members and 25s. for non-members. Attendants' boxes will be floored and lined with wood, with door. Applications for attendants' boxes must accompany entries of Stock, and Exhibitors must state the animal next to which the attendants' box is to be placed. Attendants' boxes cannot be guaranteed after the closing date.

IMPLEMENTS AND OTHER ARTICLES.

77. Implements will be received in the Yard from Tuesday, 7th July, till 5 o'clock on the afternoon of Monday, 13th July. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated. *Admission.*

78. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind. *Premiums.*

79. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition. *Refusing Entries.*

80. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of 10s. for space 10 feet wide and 20 feet deep. *Local Operatives.*

81. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this rule are moreover liable to a fine of £1. *Articles not entered.*

82. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society. *Selling by auction and noisy behaviour forbidden.*

83. The articles of each Exhibitor must all be placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M. on Friday. Those infringing this Rule shall be liable to a fine of 10s. *Placing Exhibits. Removing Exhibits.*

84. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor. Failing this being done, the Society shall be at liberty to restore the ground and charge the cost to the Exhibitor. *Restoring Turf.*

85. Exhibitors must arrange their own articles within the space allotted to them before 9 o'clock on Tuesday, and to the satisfaction of *Arranging Exhibits.*

the Stewards in charge of the Implement Yard. Exhibitors are prohibited from subletting space allotted to them, and from displaying the name of any other firm on their Stand. All signs, except signs on gables, must face the front only. Nails must not be driven into the canvas.

Signs.

Handbills.

86. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces.

*Sweeping
Stands,
etc.*

87. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show.

Fuel.

88. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required.* Coal shall not be used at any time in the Showyard. Those infringing this Rule shall incur a penalty of £5.

*Steam
Engines.*

89. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods into, from one place to another in, or out of the Showyard. Without *written* permission by the Steward of Implements or Secretary, Motor Waggon shall not be used in conveying goods into or out of the Showyard.

Motors.

*Traction
Engines.*

90. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their stands till 6 p.m. on Friday.

*Consigning
Imple-
ments.*

91. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's stand.

92. The carriage of all Implements must be prepaid.

*Photo-
graphing
in Show-
yard.*

93. Photographing in the Showyard is not permitted, except by photographers having a Stand in the Showyard or holding a "Photographer's Ticket." The "Photographer's Ticket" may be had from the Secretary, price 15s. It admits the holder to the Show when open to the public and entitles him to photograph in the Showyard, subject to arrangements made by the Stewards. No photographer shall be allowed in the ring during Parades, except with the sanction of the Steward of Parades.

*Covered
Booths.*

94. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £3, 10s. to Members and £5 to Non-Members.

*Exhibitors'
and Atten-
dants'
Tickets.*

95. Each Exhibitor in the Implement Department who is not a Member of the Society will receive one free Ticket of Admission to the Showyard for himself or a member of his firm, and will receive, in addition, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than five for one Exhibitor, may be obtained by application in writing by the Exhibitor at 5s. each. No tickets will be issued without an Order.

*Tickets to
be filled
up and
signed.*

96. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulation will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each ticket is intended must be written on it before it is used. Each person holding a Free Ticket of Admission must sign his or her name on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate. Exhibitors' attendants are strictly cautioned not to lend or transfer their Tickets, which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No Ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

*Tickets
not Trans-
ferable.
Improper
use of
Tickets.*

97. The following are the arrangements for the admission of Supplies (Refreshments or other goods) for Stand-holders during the Show: Messenger on foot (with or without hand-barrow) with supplies, admitted by Special Ticket; price for one admission, 1s., for the four days, 3s. Horse vehicle and driver with supplies, admitted by Special Ticket; price for one admission, 1s., for the four days, 5s. These Special Tickets may be had from the Secretary. Horse vehicles, with supplies, admitted throughout the day on the first day of the Show; on the other three days they will not be admitted between the hours of 10 A.M. and 5 P.M. except by written permit from the Secretary.

Admission of Supplies for Stand-holders.

98. The riding of Cycles in the Showyard is prohibited.

Cycles.

99. The Society reserves the right to allot to applicants for Stands either the whole or part of the space they ask for.

Allocation of space.

100. The Society will not be responsible for any accident that may occur from the machinery belonging to any Exhibitor; and it is a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any accident caused by his machinery.

Accidents.

101. The giving of Alcoholic Drinks to visitors at Stands in the Show is strictly prohibited.

Alcoholic Drinks.

102. Exhibitors desiring the use of gas in the Showyard should apply to the Manager of the Corporation Gasworks, Hawick, not later than Saturday, 30th May.

Gas.

103. Ground to be taken in spaces of 10 feet frontage by 20 feet deep, except in Motion Yard, which is to be 10 feet or larger amount of frontage by 50 feet deep. Exhibitors must take their space in one or other of the following Sections. Space is not let partly covered and partly open. Exhibits not in motion may be excluded from the Motion Yard. The space in the Motion Yard being limited in extent, and intended mainly for exhibits in motion, not more than one-fifth of the space allotted to any one Exhibitor—and in no case more than 400 square feet—may be occupied in the Motion Yard by exhibits not in motion.

104. The maximum extent of space which any one Exhibitor may apply for shall be 40 feet of frontage in the Motion Yard, and 100 feet of frontage in the other Sections.

Maximum Space.

105. Rates for space, payable by Exhibitors when making their Entries:—

	Members.	Non-Members.
1. Space without Shedding, 20 ft. deep, per 10 ft.	£1 5 0	£1 15 0
2. Special Space, without Shedding, 20 ft. deep, per 10 ft.	2 0 0	2 10 0
3. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	1 5 0	1 15 0
4. Special Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	2 0 0	2 10 0
5. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, <i>close boarded at back</i> , per 10 ft.	1 12 0	2 2 0
6. Special Shedding, 20 ft. deep, 7 ft. to eave, <i>close boarded at back</i> , per 10 ft.	2 7 0	2 17 0
7. *Motion Yard, without Shedding, 50 ft. deep, per foot	0 5 0	0 8 0
8. *Motion Yard, with Shedding (10 ft. open behind, 20 ft. covered, and 20 ft. <i>open in front</i>), 11 ft. to eave, per foot	0 7 0	0 10 0
9. Covered Booths for offices, 9 ft. by 9 ft., each	3 10 0	5 0 0
10. Newspaper offices, 9 ft. by 9 ft., each	£2, 10s.	

* See Rules 103 and 104.

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 9.30 A.M. The charges for admission to the Yard will be—Tuesday, from 8 A.M. till 5 P.M., 5s. Wednesday, from 8 A.M. till 5 P.M., 3s. Thursday, from 8 A.M. till 5 P.M., 2s. Friday, from 8 A.M. till 5 P.M., 1s.

On Thursday and Friday children under twelve years of age admitted at 6d.

No Pass-out Checks given, and no re-admission without payment.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Badge*," which is strictly not transferable, Members of the Society are admitted free to the Showyard and (provided there is room) to the Enclosures and Stands around the Large Ring, excepting the Reserved Seats in the Grand Stand, and such other parts as may be specially reserved. Badges will be sent to all Members residing in the United Kingdom whose addresses are known, and on no account will duplicates be issued. All Members not producing their badges must pay at the gates, and the admission money will not on any account be returned. Badges must be signed by Members before being presented at the gate, and Members should continue to wear the badge during the whole time that they are in the Showyard.

Tickets of admission to the Showyard are sent to Exhibitors of Stock, Poultry, and Dairy Produce (not Members) whose Entry Fees amount to not less than 10s.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

RESERVED SEATS (NUMBERED) IN GRAND STAND.

For Charges and Tickets, apply to Secretary.

Booking-Office in Showyard behind Grand Stand.

VARIOUS.

Exhibitors may display their own Placards *inside and in front* of their stands; with this exception, no Bills of any kind other than those of the Society are permitted on any of the Show erections. No newspapers or any other articles to be carried about the Yard for sale or display.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 3 George IV. Bridge, Edinburgh.

All Communications should be addressed to The Secretary of the Highland and Agricultural Society of Scotland, No. 3 George IV. Bridge, Edinburgh. From 8th to 16th July, to the Secretary's Office, Showyard, Hawick.

Address for Telegrams—"SOCIETY," EDINBURGH.

Telephone No.—CENTRAL 3655.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 11th May.

HORSES, CATTLE, SHEEP, AND SWINE—Friday, 5th June.

POULTRY, DAIRY PRODUCE, AND WOOL (separate forms)—Friday, 5th June.

No Entry at ordinary fees taken later than those which are received at the Society's Office, Edinburgh, by first post, or 10 o'clock, on Friday morning (5th June). Late Entries for Cattle, Horses, Sheep, and Swine taken on payment of 10s. additional for each entry (Poultry and Dairy Produce at double fees) till Wednesday morning (10th June), at the Society's Office, Edinburgh, at 10 o'clock.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 26th June. All applications for horse-boxes and trucks, and for information as to arrangements of Special Trains, must be made by the Exhibitors themselves to the Stationmaster where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are indicated below, but exhibitors are recommended to apply to the respective companies for full particulars:—

1. Live Stock and Goods to the Show to be charged ordinary rates.
2. Live Stock and Goods from the Show, if sold, to be charged ordinary rates.
3. Live Stock from the Show, if unsold and returned not later than the second day after the closing day of the Show (Sunday to be treated as a *dies non*), to be carried at half rates back to the station whence they were sent, at owners' risk, on surrender of a certificate from the Exhibitor to the effect that they are really unsold; failing surrender of such certificate, ordinary rates must be charged. The reduction to half rate is to be allowed only when the animals are consigned to be returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the animals at half rates by a different route owned by the same Railway or Railways over which the consignment was carried on the outward journey. The minimum charge for Stock returned at half rates will be one-half the ordinary minimum.

If the unsold Live Stock which was carried on the outward journey by Passenger Train in horse-boxes be required to be returned by Goods Train in cattle trucks, half the Goods Train rates must be charged.

If the unsold Live Stock which was carried on the outward journey by Goods Train in cattle trucks be required to be returned by Passenger Train in horse-boxes, half the Passenger Train rates must be charged.

4. Horses and Cattle, when sent for exhibition from one Agricultural Show to another, in another part of the country, are charged the ordinary single rates in respect of each journey, from point to point, up to the last station to which they are sent for exhibition. If remaining unsold when returned from the latest Show to the originating or home station, they are—on surrender of the necessary certificates—charged half rates at owners' risk, provided such return journey is made by the line of the company by whose route it was conveyed on the outward journey, and provided the railway traversed was covered on the outward journey; but it shall be in the option of the Railway Company or Companies to return the animals at half rates by a different route owned by the same Railway or Railways over which the consignment was carried on the outward journey. If conveyed by Goods Train, unsold Live Stock transferred from one Agricultural Show to another in another part of the country must be charged ordinary rates up to the latest Show, from which they will be returned to the original forwarding station at half rates at owners' risk, as above.

5. Agricultural Machines, Implements, and other Exhibits from the Show, if unsold, to be conveyed at half rates back to the Station whence they were sent, at Owner's risk, on production of a Certificate from the Exhibitor to the effect that they are unsold; failing production of such Certificate, ordinary rates

must be charged. The reduction to half rates is to be allowed only when the articles are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the articles at half rates by a different route.

6. Unsold goods, previously carried by railway, transferred from one Agricultural Show to another, in another part of the country, or exhibited at several Shows consecutively, and returned to the station from whence originally sent, will be conveyed at half rates at owners' risk, on production of certificate from the Exhibitor to the effect that they are unsold; failing production of such certificate, ordinary rates will be charged. This applies only to Goods Trains.

7. Poultry to be charged ordinary rates both ways, and will not be accepted for conveyance unless the carriage charges are prepaid.

8. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*

9. Provender conveyed to Agricultural Shows with Live Stock will be charged ordinary rates, except so much of the same as may be required on the journey.

10. Men, certified by the owners to be *bona fide* in charge of Live Stock, to be conveyed free in the same train as the animals, as follows: *In Horse-boxes* [Horses and Cattle]—One man for each consignment, except where the consignment requires more than one vehicle, when one man for each vehicle may be sent free; but where two or three horses or cattle forming one consignment are sent in the same horse-box, and a man is required to travel with each animal, a man for each animal may be conveyed free, provided each animal is charged for separately. *In Horse-boxes* [Small Animals] and *in specially constructed Cattle Trucks* [Cattle or other Animals]—One man to each vehicle. Upon both the outward and homeward journeys a separate certificate and contract must be given, which must be retained by the stationmaster at the outward or homeward starting-point, as the case may be.

11. The ordinary rates charged for carriage do not in any case include delivery to, or collection from, the Show-ground.

12. Agricultural Societies' Show Plant must be charged at Class C rates, station to station.

13. Tents, Canvas, and other articles, not for exhibition, to be charged the ordinary rates both going and returning.

14. The carriage of all Live Stock, Implements, and other articles going to the Show for exhibition must be *prepaid*.

DELIVERY AND COLLECTION CHARGES.

The following will be the Charges for the Delivery or Collection of Live Stock, Implements, and other articles between the Railway Station at Hawick and the Show-ground:—

1. General traffic, 3s. per ton (minimum charge, 1s. 6d.)
2. Implements and Machinery (Agricultural), not exceeding 1 ton each, 4s. per ton (minimum charge, 2s.)
3. Implements and Machinery (Agricultural), on their own wheels (specially hauled), not exceeding 1 ton, 4s. each.
4. Single articles, exceeding 1 ton but not exceeding 3 tons, 4s. per ton.
5. Single articles, exceeding 3 tons but not exceeding 5 tons, 6s. per ton.
6. Single articles, exceeding 5 tons, by special arrangement only, but no less charge than 8s. per ton.
7. Rustic Houses, by special arrangement only, but no less charge than 7s. 6d. per load.
8. Carriages, four-wheeled, 4s. 6d. each.
9. Carriages, two-wheeled, 4s. each.
10. Cattle, in floats, 3s. per head; minimum charge, 4s. 6d.
11. Sheep and Pigs, in floats, 1s. per head (minimum charge, 3s., and maximum charge, 5s. for each float).
12. Parcels or Hampers by Passenger Train, 3d. each; minimum charge, 6d.

THE PRESIDENT'S CHAMPION MEDALS

A **Char.** Medal is given by the Right Hon. THE EARL OF DALKEITH, President of the Society, for the *best Animal* in each of the following sections:—

1. Shorthorn.	8. Clydesdale Stallions.	13. Ponies.	19. Border Leicester.
2. Aberdeen-Angus.	9. Draught Geldings.	14. Highland Ponies.	20. Half-bred.
3. Galloway.	10. Clydesdale Mares and Fillies.	15. Shetland Ponies.	21. Shropshire.
4. Highland.		16. Harness Horses.	22. Oxford-Down.
5. Ayrshire.	11. Hunters.	17. Blackface Sheep.	23. Suffolk.
6. Shetland.	12. Hackneys.	18. Cheviot.	24. Swine.
7. British Holstein.			

NOTE.—Animals entered as *Extra Stock* may compete for these Medals. Former Winners of the President's Medals are eligible. The Society shall have the right to photograph the Winners for publication in the 'Transactions.' At this Show no animal can be awarded more than one of these Medals.

ENTRY FEES			CLASS			PREMIUMS			
Members	Non-Members	First				Second	Third	Fourth	
* CATTLE									
SHORTHORN									
<i>President's Medal for best Shorthorn</i>									
15/-	25/-	1	Bull calved before 1912	15	10	5	3		
15/-	25/-	2	Bull calved in 1912	15	10	5	3		
15/-	25/-	3	Bull calved in 1913	12	8	4	2		
¹ Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—£20.									
¹ Silver Medal to the Breeder of the winner of above Prize.									
Breeder of best Bull of any age in the three Classes—The Silver Medal.									
15/-	25/-	4	Cow of any age in Milk	12	8	4	2		
15/-	25/-	5	Heifer calved in 1912	10	5	3	2		
15/-	25/-	6	Heifer calved in 1913	10	5	3	2		
¹ Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20.									
¹ Silver Medal to the Breeder of the winner of above Prize.									
TOTAL PRIZE MONEY . . . £158									
ABERDEEN-ANGUS									
<i>President's Medal for best Aberdeen-Angus Animal</i>									
15/-	25/-	7	Bull calved before 1st Dec. 1911	15	10	5	3		
15/-	25/-	8	Bull calved on or after 1st Dec. 1911	15	10	5	3		
15/-	25/-	9	Bull calved on or after 1st Dec. 1912	12	8	4	2		
² Ballindalloch Challenge Cup, value £50, for the best Bull in the three Classes.									

¹ Given by the Shorthorn Society.

² "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by Sir John Macpherson Grant, Bart., of Ballindalloch. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

* See Rule 40A.

ENTRY FEES		CLASS	CATTLE	PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
			ABERDEEN-ANGUS—continued				
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
15/-	25/-	10	Cow of any age in Milk	12	8	4	2
			¹ Ballindalloch Challenge Cup, value £50, for the best Cow of any age in the above Class.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
15/-	25/-	11	Heifer calved on or after 1st Dec. 1911	10	5	3	2
15/-	25/-	12	Heifer calved on or after 1st Dec. 1912	10	5	3	2
			² Champion Gold Medal, value £10, for best animal in the breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete.				
			TOTAL PRIZE MONEY . . . £158				
			GALLOWAY				
			<i>President's Medal for best Galloway</i>				
15/-	25/-	13	Bull calved before 1st Dec. 1911	15	10	5	3
15/-	25/-	14	Bull calved on or after 1st Dec. 1911	15	10	5	3
15/-	25/-	15	Bull calved on or after 1st Dec. 1912	12	8	4	2
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
15/-	25/-	16	Cow of any age in Milk	12	8	4	2
15/-	25/-	17	Heifer calved on or after 1st Dec. 1911	10	5	3	2
15/-	25/-	18	Heifer calved on or after 1st Dec. 1912	10	5	3	2
			³ Dr Gillespie Memorial Challenge Trophy, value £50, for best Galloway Animal in the breeding Classes, breeding Animals shown as "Extra Stock" being eligible to compete—see conditions below.				
			TOTAL PRIZE MONEY . . . £158				
			HIGHLAND				
			<i>President's Medal for best Highland Animal</i>				
15/-	25/-	19	Bull calved before 1912	15	10	5	3
15/-	25/-	20	Bull calved in 1912	15	10	5	3

¹ "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus classes, the former-presented by the late Sir George Macpherson Grant, Bart., and the latter by Sir John Macpherson Grant, Bart., of Ballindalloch. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

² Given by the Aberdeen-Angus Cattle Society.

³ This Trophy is offered by the Galloway Cattle Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Galloway animal registered in the Galloway Herd-Book, entered in any of the Breeding classes, at the Show or Shows at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Galloway Cattle Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Galloway Cattle Society's Silver Medal as a memento of his winning the Trophy.

ENTRY FEES		CLASS	CATTLE	PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
			HIGHLAND—continued				
15/-	25/-	21	Bull calved in 1913	12	8	4	
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
15/-	25/-	22	Cow of any age in Milk	12	8	4	
15/-	25/-	23	Heifer calved in 1911	10	5	3	
15/-	25/-	24	Heifer calved in 1912	10	5	3	
			TOTAL PRIZE MONEY				£158
			AYRSHIRE				
			<i>President's Medal for best Ayrshire</i>				
25/-	35/-	25	¹ Cow in Milk,* calved before 1911	12	8	4	
25/-	35/-	26	¹ Cow in Milk,* calved after 1st Jan. 1911	10	7	3	
25/-	35/-	27	¹ Cow of any age in Calf,* or Heifer, calved in 1911, in Calf and due to calve within nine months after the Show	10	7	3	
15/-	25/-	28	Heifer calved in 1912	10	5	3	
15/-	25/-	29	Heifer calved in 1913	8	5	3	
			² Special Prize of £10 for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st Jan. 1914.				
15/-	25/-	30	Bull calved before 1912	12	8	4	
15/-	25/-	31	Bull calved in 1912	10	7	3	
15/-	25/-	32	Bull calved in 1913	8	5	3	
			Breeder of best Bull of any age in Classes 30, 31, and 32—The Silver Medal.				
			MILK RECORD CLASS				
15/-	25/-	33	³ Bull, any age, the progeny of an Ayrshire Cow having an authenticated milk yield— ⁴ Premiums, £15, £10, and £5.				
			² Special Prize of £10 for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st Jan. 1914.				
			TOTAL PRIZE MONEY				£158

* See Rule 69.

¹ Cows in these Classes must have produced a calf within fifteen months prior to the Show.

² Given by the Ayrshire Cattle Herd-Book Society.

³ Animals entered in this Class must be the progeny of dams certified by the Secretary of the Scottish Milk Records Association to have produced, as cows, at least once, not less than 900 gallons, or as heifers, not less than 750 gallons of milk, averaging not less than 3·5 per cent of butter fat, within a lactation period not exceeding 52 weeks preceding calving, or alternatively, 40 weeks after calving. Forms of certificate will be issued on application to the Secretary of the Highland and Agricultural Society. Animals already entered in Classes 30, 31, and 32 may be entered in Class 33 without additional fee.

⁴ Given by the Board of Agriculture for Scotland.

ENTRY FEES		CLASS	PREMIUMS		
Members	Non-Members		First	Second	Third
CATTLE					
SHETLAND					
President's Medal for best Shetland Animal			£	£	£
15/-	25/-	34	5	3	2
15/-	25/-	35	5	3	2
TOTAL PRIZE MONEY			£20		
BRITISH HOLSTEIN					
President's Medal for best British Holstein Animal					
15/-	25/-	36	8	4	2
15/-	25/-	37	6	3	2
15/-	25/-	38	8	4	2
15/-	25/-	39	6	3	2
A Silver Medal is offered by the British Holstein Cattle Society to the Winner of each First Prize, provided that at least three Exhibitors make entries in the Class, and that the owner is a member of that Society.					
1 TOTAL PRIZE MONEY			£50		
Total Prize Money for Cattle, £860					

¹ £20 contributed by the British Holstein Cattle Society, and £10 by Scottish members of that Society.

ENTRY FEES		CLASS	PREMIUMS			
Members	Non-Members		First	Second	Third	Fourth
			£	£	£	£
¹ HORSES						
FOR AGRICULTURAL PURPOSES						
DRAUGHT STALLIONS						
<i>President's Medal for best Clydesdale Stallion or Colt</i>						
30/-	40/-	40	Stallion foaled before 1911	20	15	10 4
30/-	40/-	41	Entire Colt foaled in 1911	20	15	10 4
30/-	40/-	42	Entire Colt foaled in 1912	20	12	8 4
22/6	32/6	43	Entire Colt foaled in 1913	15	10	6 4
Breeder of best Male Animal of any age in Classes 40, 41, 42, and 43—The Silver Medal.						
TOTAL PRIZE MONEY . . . £177						
DRAUGHT GELDINGS						
<i>President's Medal for best Draught Gelding</i>						
22/6	32/6	44	Draught Gelding foaled before 1911	10	5	3 —
22/6	32/6	45	Draught Gelding foaled in 1911	6	4	3 —
22/6	32/6	46	Draught Gelding foaled in 1912	6	4	3 —
TOTAL PRIZE MONEY . . . £44						
DRAUGHT MARES AND FILLIES						
<i>President's Medal for best Clydesdale Mare or Filly</i>						
30/-	40/-	47	Mare of any age, with Foal at foot	20	12	7 4
22/6	32/6	48	Yeld Mare foaled before 1911	12	9	6 4
22/6	32/6	49	Yeld Mare or Filly foaled in 1911	12	9	6 4
22/6	32/6	50	Filly foaled in 1912	12	9	6 4
22/6	32/6	51	Filly foaled in 1913	12	9	6 4
Best Clydesdale Mare or Filly—Cawdor Challenge Cup, value 50 guineas. See Conditions below. ²						
³ William Taylor Memorial Prize of not less than £10 and Certificate to the breeder of the best Clydesdale Filly entered in Classes 50 or 51.						
TOTAL PRIZE MONEY . . . £167						
Total Prize Money for Draught Horses, £388						

¹ For prizes given by the Society, no animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Driving Classes.

² This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book, entered in any of the Draught Horse Classes, at the Show at which it may be competed for. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

³ Given by William Taylor Memorial Committee.—Annual free income from Fund of £300.

ENTRY FEES		CLASS	HORSES HUNTERS	PREMIUMS		
Members	Non-Members			First	Second	Third
			<i>Judges are empowered to transfer to the proper Classes horses which in regard to weight-carrying are, in their opinion entered in the wrong Classes.</i>			
			<i>President's Medal for best Hunter</i>			
			¹ Renfrewshire Perpetual Gold Challenge Cup , value £250, for best Mare or Filly in the Hunter Classes, "Extra Stock" being eligible to compete.			
22/6	32/6	52	Colt or Gelding , foaled in 1913, the produce of thoroughbred Stallion or registered Hunter sire, out of Mare of any breed	10	5	3
22/6	32/6	53	Filly , foaled in 1913, the produce of thoroughbred Stallion or registered Hunter sire, out of Mare of any breed	10	5	3
22/6	32/6	54	Colt or Gelding , for field, foaled in 1912—in hand	10	5	3
22/6	32/6	55	Filly , for field, foaled in 1912—in hand	10	5	3
22/6	32/6	56	Colt or Gelding , for field, foaled in 1911—in hand	10	5	3
22/6	32/6	57	Yield Mare or Filly , for field, foaled in 1911—in hand	10	5	3
			² Best Hunter Filly in Classes 53, 55, and 57, registered with a number, in the Hunter Stud-Book, or the entry tendered within a month of the award—Champion Gold Medal.			
22/6	32/6	58	Mare or Gelding , foaled in 1910, to carry 13 st. 7 lb. and over—in saddle	15	10	5
22/6	32/6	59	Mare or Gelding , foaled in 1910, to carry under 13 st. 7 lb.—in saddle	15	10	5
22/6	32/6	60	Mare or Gelding , foaled before 1910, to carry 13 st. 7 lb. and over—in saddle	15	10	5
22/6	32/6	61	Mare or Gelding , foaled before 1910, to carry under 13 st. 7 lb.—in saddle	15	10	5
30/-	40/-	62	Hunter Brood Mare , with Foal at Foot	15	7	3
			³ Special Prize of £10 for best Mare or Gelding bred in Scotland, four years old and upwards, in Classes 58 and 60.			
			³ Special Prize of £5 to the breeder of the animal winning above prize.			
			³ Special Prize of £8 for the best Mare or Gelding bred in Scotland, four years old and upwards, in Classes 59 and 61.			
			³ Special Prize of £4 to the breeder of the animal winning above prize.			

¹ This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir MacKean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrewshire in 1913. This year the Cup is offered for the best Mare or Filly in the Hunter Classes. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a replica in silver as a memento of his winning the Cup.

³ Given by the Hunters' Improvement and National Light Horse Breeding Society.

³ Given by Royal Caledonian Hunt.

ENTRY FEES		CLASS	HORSES	PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
			HUNTERS—continued			
			THE FOLLOWING SPECIAL PRIZES ARE CONFINED TO HUNTERS, THE PROPERTY OF TENANT FARMERS IN SCOTLAND WHOSE CHIEF OCCUPATION IS FARMING:—			
			Best animal in Classes 52 and 53	5	—	—
			Best animal in Classes 54 and 55	5	—	—
			Best animal in Classes 56 and 57	5	—	—
			Best animal in Class 58	5	—	—
			Best animal in Class 59	5	—	—
			Best animal in Class 62	6	—	—
			¹ TOTAL PRIZE MONEY	£284		
			HACKNEYS			
			(All to be shown in hand)			
			President's Medal for best Hackney in Classes 63 to 69			
30/-	40/-	63	Brood Mare, over 14 hands, with Foal at foot, or to foal this season to a registered sire	10	6	4
22/6	32/6	64	Yeld Mare or Filly foaled in 1911	8	5	3
22/6	32/6	65	Filly foaled in 1912	8	5	3
22/6	32/6	66	Filly foaled in 1913	8	5	3
			² Champion Prize of £10, or a Gold Medal of the same value, at the option of the Exhibitor, is offered by the Hackney Horse Society for best Mare or Filly in Hackney or Pony Classes, animals entered as "Extra Stock" being eligible.			
30/-	40/-	67	Stallion foaled in or before 1911, over 14 hands	10	6	4
22/6	32/6	68	Entire Colt foaled in 1912	8	5	3
22/6	32/6	69	Entire Colt foaled in 1913	8	5	3
			All animals entered in the above Hackney Classes must be registered in the Hackney Stud-Book except in Classes 66 and 69, and animals entered in these latter Classes must be eligible for entry in the Hackney Stud-Book. Entry forms must be accompanied by certificate to this effect from Mr F. F. Euren, 12 Hanover Square, London, W.			
			TOTAL PRIZE MONEY	£120		

¹ £159 of the above contributed and collected by Directors in the Border District.

² A Mare 6 years old or more must have had a living foal. Winners of the Hackney Society's £10 Prize or Gold Medal in 1914, except at the London and Royal English Shows, excluded. The winner must be entered or accepted for entry in Hackney Stud-Book, and certified free from hereditary disease. This Gold Medal is not redeemable.

ENTRY FEE		CLASS		PREMIUMS	First	Second	Third
Members	Non-Members						
			HORSES				
			PONIES				
			(Classes 70 to 73 will be judged by Hackney Judges)				
			<i>President's Medal for best Pony</i>				
22/6	32/6	70	Stallion, 3 years old and upwards, 14 hands and under—in hand	5	3	2	
22/6	32/6	71	Yeld Mare, Filly, or Gelding, 3 years old and upwards, over 13 and not over 14 hands—in saddle	5	3	2	
22/6	32/6	72	Yeld Mare, Filly, or Gelding, 3 years old and upwards, over 12 and not over 13 hands—in saddle	5	3	2	
22/6	32/6	73	Yeld Mare, Filly, or Gelding, 3 years old and upwards, 12 hands and under—in hand	5	3	2	
			(See Champion Prize under Hackneys, as above)				
			Pony, any age, under 10½ hands, in saddle— ¹ Prizes, £5, £3, £2. (To be judged by Hunter Judges.)				
			TOTAL PRIZE MONEY . . . £40				
			HIGHLAND PONIES				
			<i>President's Medal for best Highland Pony</i>				
22/6	32/6	74	Highland Pony Stallion of the heavy type, 3 years old or upwards, not exceeding 14.2 hands	8	4	2	
22/6	32/6	75	Highland Pony Stallion of the light type, 3 years old or upwards, not exceeding 14.2 hands	8	4	2	
22/6	32/6	76	Highland Pony Entire Colt, foaled after 1st January 1912	8	4	2	
22/6	32/6	77	Highland Pony Mare of the heavy type, 3 years old or upwards, not exceeding 14.2 hands, yeld or with Foal at foot	8	4	2	
22/6	32/6	78	Highland Pony Mare of the light type, 3 years old or upwards, not exceeding 14.2 hands, yeld or with Foal at foot	8	4	2	
22/6	32/6	79	Highland Pony Filly, foaled after 1st January 1912	8	4	2	
			² Special Prize of £15 for the best Highland Pony Stallion or Mare actually registered with a number in the National Pony Stud-Book, "Extra Stock" being eligible to compete.				
			The Judge shall have power to transfer to the proper Class any animal entered wrongly as to type.				
			³ TOTAL PRIZE MONEY . . . £84				

¹ Given by several members of the Shetland Pony Stud-Book Society, per Mr R. W. R. Mackenzie.

² Given by the National Pony Society.

³ The Board of Agriculture for Scotland gives £40 towards these prizes.

ENTRY FEES		CLASS	HORSES	PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
HORSES							
SHETLAND PONIES							
<i>(All to be shown in hand)</i>							
<i>President's Medal for best Shetland Pony</i>							
20/-	30/-	80	Stallion , not exceeding 10½ hands, foaled before 1911	8	5	3	2
20/-	30/-	81	Entire Colt , not exceeding 10½ hands, foaled in 1911 or 1912	8	5	3	2
20/-	30/-	82	Mare , not exceeding 10½ hands, with Foal at foot	8	5	3	2
20/-	30/-	83	Yeld Mare , not exceeding 10½ hands	8	5	3	2
20/-	30/-	84	Filly , not exceeding 10½ hands, foaled in 1911 or 1912	8	5	3	2
20/-	30/-	85	¹ Shetland Pony Mare , four years old and upwards, entered or eligible for entry in the Shetland Pony Stud-Book, either with Foal at foot or Yeld, which has never won a prize—to be shown unshod, ungroomed, and in natural condition. Prize winners in Classes 82 and 83 not eligible—£5, £3, and £2.				
Pony—in saddle (see page 22).							
TOTAL PRIZE MONEY				£90			
² HORSES IN HARNESS							
<i>³ President's Medal for best animal in the Classes for Horses in Harness</i>							
22/6	32/6	86	Yeld Mare, Filly, or Gelding , any age, in Harness, 15 hands and upwards, to be driven in the ring	10	5	3	—
22/6	32/6	87	Yeld Mare, Filly, or Gelding , any age, in Harness, under 15 hands, to be driven in the ring.	10	5	3	—
Special Prize for best Pony in Class 87, under 13 hands				5	—	—	—
TOTAL PRIZE MONEY				£41			
Total Prize Money for Horses, £1047							

¹ Given by "Four Lovers of the Breed," per Mr W. Mungall of Transy.

² Animals entered in other Classes may be entered in the Harness Classes at an additional fee of 5s. if they are eligible.

³ An animal that has won a President's Medal in another section in this Show shall not be eligible to compete for the Medal in this section.

Shed accommodation for machines for Driving Competitions—Members, 5s.; Non-Members, 10s.

JUMPING COMPETITIONS

SPECIAL REGULATIONS

(See also the Regulations on pages 58 to 63)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, the 15th, 16th, and 17th July.
2. Entries for each day's Competitions will close at the Secretary's Office in the Showyard at 6 P.M. on the preceding day.
3. *Entry Fees*.—Wednesday, £1; Thursday and Friday, 10s. for each class.
4. *Accommodation* for jumping horses will be provided as follows: Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than ten days before the opening of the Show, stalls or loose-boxes will be provided at a charge (in addition to the Entry Fee) of £1 for a stall and £1, 10s. for a loose-box, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 12 noon on the day of Competition, and may leave the Showyard at 6 P.M. each day.
6. *The Jumps* may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

CLASS		First	Second	Third	Fourth	Fifth
	WEDNESDAY.	£	£	£	£	£
1	Horse or Pony any height	20	15	10	5	3
	THURSDAY.					
2	Horse or Pony any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	10	8	5	3	2
	FRIDAY.					
3	Horse or Pony any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 2—4 inches extra for the winner of the two first prizes in Classes 1 and 2	10	8	5	3	2
	Champion Prize for most points in Prizes with one or more horses in above Classes—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie	10	—	—	—	—
	Total Prize Money for Jumping, £119					

Special Entry Forms for above Competitions to be had on application.

ENTRY FEES			CLASS	S H E E P	BLACKFACE	PREMIUMS			
Members	Non- Members	First				Second	Third	Fourth	
				<i>President's Medal for best animal of Blackface breed</i>					
10/-	15/-	88		Tup above one shear	£ 12	£ 8	£ 4	£ 2	
10/-	15/-	89		Shearling Tup	12	8	4	2	
10/-	15/-	90		Ewe above one shear, with her Lamb at foot	10	5	2	—	
10/-	15/-	91		Shearling Ewe or Gimmer	10	5	2	—	
10/-	15/-	92		Best Blackface Shearling Ram , clipped bare on or after 1st April 1914, to be inspected by two local members of the Society, and certified that no part of the animal has been clipped prior to said date *— ¹ Prizes, £5, £3, and £2.					
				Best Group of Four Blackface Sheep , consisting of Aged Tup, Shearling Tup, Ewe, and Shearling Ewe or Gimmer, the three latter to be bred by exhibitor, "Extra Stock" being eligible to compete— ² Prizes, £5, £3, and £2.					
				Blackface Tup , growing the best wool for manufacturing purposes, free from black spots and kemp, "Extra Stock" being eligible to compete — ³ Prizes, £3 and £2.					
10/-	15/-	93		Best Blackface Tup Lamb bred from a Ewe never out of the owner's possession— ³ Prizes, £3 and £2.					
				TOTAL PRIZE MONEY					£86
CHEVIOT									
				<i>President's Medal for best animal of the Cheviot breed</i>					
				⁴ Fife and Kinross Perpetual Gold Challenge Cup , value £200, for best Group of Cheviot Sheep, comprising a Ram, a Ewe, and a Gimmer—the Ewe and the Gimmer to be bred by the exhibitor, "Extra Stock" being eligible to compete.					
10/-	15/-	94		Tup above one shear	12	8	4	2	
10/-	15/-	95		Shearling Tup	12	8	4	2	
10/-	15/-	96		Ewe above one shear, with her Lamb at foot	10	5	2	—	
10/-	15/-	97		Shearling Ewe or Gimmer	10	5	2	—	
				⁵ Best Group of Cheviot Sheep , drawn from ordinary Classes or otherwise, comprising Tup over two shear, Shearling Tup, Ewe of any age which has reared a lamb in 1914, and Gimmer, the three latter to be bred by exhibitor—Prizes, £8, £4, and £3.					

* Certificates as to clipping must be lodged with entry. Form of Certificate may be obtained from Secretary. Animals already entered in Class 89 may be entered in Class 92 without further entry fee.

¹ Given by Mr W. W. Anderson, Colzium.

² Given by Mr William Elliot, Lanark.

³ Given by Mr J. Richmond, Kippenross.

⁴ This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912. This year the Cup is offered for the best Group of Cheviot Sheep, as defined above. The animals winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

⁵ Given by the Cheviot Sheep Society.

ENTRY FEES		CLASS	SHEEP				PREMIUMS			
Members	Non Members		CHEVIOT—continued				First	Second	Third	Fourth
			¹ Perpetual Challenge Cup, gifted by Mr Borthwick, value £25, for best Sheep in the Cheviot Classes.				£	£	£	£
			TOTAL PRIZE MONEY . . . £86							
			BORDER LEICESTER							
			<i>President's Medal for best animal of Border Leicester breed</i>							
			² Paisley Perpetual Gold Challenge Cup, value £300, for best Group of Border Leicester Sheep, comprising Aged Ram, Shearling Ram, Ewe, and Gimmer—the three latter to be bred by exhibitor, "Extra Stock" being eligible to compete.							
			Tweeddale Gold Medal for the best Border Leicester Tup.							
10/-	15/-	98	Tup above one shear				12	8	4	2
10/-	15/-	99	Shearling Tup				12	8	4	2
			³ Gold Medal for best male animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.							
10/-	15/-	100	Ewe above one shear				10	5	2	—
10/-	15/-	101	Shearling Ewe or Gimmer				10	5	2	—
			³ Gold Medal for best female animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.							
			TOTAL PRIZE MONEY . . . £86							
			HALF-BRED							
			<i>President's Medal for best Half-Bred Animal</i>							
10/-	15/-	102	Tup above one shear				12	8	4	2
10/-	15/-	103	Shearling Tup				12	8	4	2
10/-	15/-	104	Ewe above one shear				10	5	2	—
10/-	15/-	105	Shearling Ewe or Gimmer				10	5	2	—
10/-	15/-	106	Three Ewe Lambs				5	3	2	—
			⁴ Three Ewe Lambs entered in Class 106, these to be pure Leicester Cheviots, i.e., by a Border Leicester Ram out of a Cheviot Ewe—£5, £3, £2.							
			TOTAL PRIZE MONEY . . . £96							

¹ Given by the Cheviot Sheep Society.² This Cup, along with an endowment of £800, was provided from money collected in Paisley by the late Provost Muir MacKean, and is in commemoration of the Society's first Show at Paisley in 1913. This year the Cup is offered for the best Group of Border Leicester Sheep, as defined above. The animals winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a replica in silver as a memento of his winning the Cup.³ Given by the Society of Border Leicester Sheep-Breeders.⁴ Given by the Teviotdale Farmers' Club.

ENTRY FEES		CLASS	SHEEP	PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
SHROPSHIRE						
<i>President's Medal for best Shropshire Animal</i>						
10/-	15/-	107	Shearling Tup	6	4	2
10/-	15/-	108	Shearling Ewe or Gimmer	5	3	2
TOTAL PRIZE MONEY				£22		
OXFORD-DOWN						
<i>President's Medal for best Oxford-Down Animal</i>						
10/-	15/-	109	Shearling Tup	6	4	2
10/-	15/-	110	Shearling Ewe or Gimmer	5	3	2
1 Best Shearling Tup in Class 109, bred in Scotland, to be registered in Oxford-Down Flock-Book before prizes will be paid—£5, £3, and £2.						
TOTAL PRIZE MONEY				£22		
SUFFOLK						
<i>President's Medal for best Suffolk Sheep</i>						
10/-	15/-	111	Shearling Tup	6	4	2
10/-	15/-	112	Shearling Ewe or Gimmer	5	3	2
10/-	15/-	113	2 Tup Lamb—£5, £3, and £2.			
10/-	15/-	114	2 Three Ewe Lambs—£5, £3, and £2.			
TOTAL PRIZE MONEY				£22		
FAT SHEEP						
10/-	15/-	115	Three Fat Lambs, any breed or cross, dropped in the year of the Show	5	3	2
Total Prize Money for Sheep, £430						

¹ Given by Oxford-Down Sheep-Breeders' Association.

² Given by the Suffolk Sheep Society.

ENTRY FEES		CLASS	SWINE	PREMIUMS		
Members	Non-Members			First	Second	Third
			<i>President's Medal for best pen of Swine</i>	£	£	£
			LARGE WHITE BREED			
10/-	15/-	116	Boar farrowed before 1913	6	3	2
10/-	15/-	117	Boar farrowed in 1913	6	3	2
10/-	15/-	118	Boar farrowed in 1914	4	2	1
10/-	15/-	119	Sow farrowed before 1913	6	3	2
10/-	15/-	120	Sow farrowed in 1913	6	3	2
10/-	15/-	121	Sow farrowed in 1914	4	2	1
			TOTAL PRIZE MONEY	£58		
			MIDDLE WHITE BREED			
10/-	15/-	122	Boar, any age	4	2	—
10/-	15/-	123	Boar farrowed in 1914	4	2	—
10/-	15/-	124	Sow, any age	4	2	—
10/-	15/-	125	Sow farrowed in 1914	4	2	—
			TOTAL PRIZE MONEY	£24		
			BERKSHIRE			
10/-	15/-	126	Boar, any age	4	2	—
10/-	15/-	127	Boar farrowed in 1914	4	2	—
10/-	15/-	128	Sow, any age	4	2	—
10/-	15/-	129	Sow farrowed in 1914	4	2	—
			TOTAL PRIZE MONEY	£24		
			Total Prize Money for Swine, £106			

EXTRA STOCK

Animals not included in the Classes for Competition may be exhibited as Extra Stock and may receive Awards as follows:—Very Highly Commended, the Silver Medal; Highly Commended, the Medium Silver Medal; Commended, the Bronze Medal.

Animals entered as Extra Stock are eligible to compete for the President's Medals, whether former winners of these Medals or not. They are also eligible to compete for Special Prizes where the conditions of these prizes permit.

Entry fees—same as corresponding Classes.

POULTRY

First Premium—ONE SOVEREIGN; *Second Premium*—TEN SHILLINGS. In each Class in which there are six or more pens competing, a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens. Three or more Commendations may also be given—thus, Very Highly Commended, Highly Commended, and Commended.

Champion Medals are offered as follows :—

- | | |
|--------------------------------|------------------------------|
| 1. Best Cock, any Variety. | 4. Best Pullet, any Variety. |
| 2. Best Hen, any Variety. | 5. Best Pen of Waterfowls. |
| 3. Best Cockerel, any Variety. | 6. Best Pen of Turkeys. |

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Entry Fees—Members, 2s.; Non-Members, 3s.

DORKING—	Class	LANGSHAN	Class
<i>Coloured</i>	1. Cock		39. Cock
	2. Hen		40. Hen
	3. Cockerel		41. Cockerel
	4. Pullet		42. Pullet
<i>Silver Grey</i>	5. Cock	ORPINGTON—	
	6. Hen	<i>Black</i>	43. Cock
	7. Cockerel		44. Hen
	8. Pullet		45. Cockerel
BRAHMAPOOTRA or COCHIN-CHINA	9. Cock	<i>Buff</i>	46. Pullet
	10. Hen		47. Cock
	11. Cockerel		48. Hen
	12. Pullet		49. Cockerel
SCOTCH GREY	13. Cock	<i>Any other Variety</i>	50. Pullet
	14. Hen		51. Cock
	15. Cockerel		52. Hen
	16. Pullet		53. Cockerel
HAMBURG—			54. Pullet
<i>Black</i>	17. Cock	WYANDOTTE—	
	18. Hen	<i>Gold or Silver</i>	55. Cock
<i>Any other Variety</i>	19. Cock		56. Hen
	20. Hen		57. Cockerel
<i>Any Variety</i>	21. Cockerel	<i>Black or White</i>	58. Pullet
	22. Pullet		59. Cock
PLYMOUTH ROCK	23. Cock		60. Hen
	24. Hen		61. Cockerel
	25. Cockerel	<i>Any other Variety</i>	62. Pullet
	26. Pullet		63. Cock
MINORCA	27. Cock		64. Hen
	28. Hen		65. Cockerel
	29. Cockerel		66. Pullet
	30. Pullet	RHODE ISLAND RED	67. Cock
LEGHORN—			68. Hen
<i>White</i>	31. Cock		69. Cockerel
	32. Hen	INDIAN GAME	70. Pullet
	33. Cockerel		71. Cock
	34. Pullet		72. Hen
<i>Any other Variety</i>	35. Cock	GAME—	
	36. Hen	<i>Old English</i>	73. Cock
	37. Cockerel		74. Hen
	38. Pullet	<i>Modern</i>	75. Cock
			76. Hen
		<i>Indian and Old English</i>	
		<i>Game</i>	77. Cockerel
			78. Pullet

Special Entry Forms for Poultry Classes.

[Over.]

BANTAM—	Class
<i>Game, any Variety, including Old English and Indian Game</i>	79. Cock
	80. Hen
<i>Any other Variety Bantam</i>	81. Cock
	82. Hen
ANY OTHER RECOGNISED BREED OF POULTRY .	83. Cock
	84. Hen
	85. Cockerel
	86. Pullet

TABLE FOWLS—	
<i>Any Breed or Cross, to be judged solely as Table Fowls, and without regard to fancy points</i>	87. { Pair of Cockerels
	88. { Pair of Pullets

DUCKS—	Class
<i>Aylesbury</i>	89. Drake
	90. Duck
	91. { Drake (Young)
	92. { Duck (Young)
<i>Rouen</i>	93. Drake
	94. Duck
<i>Any other Variety</i>	95. Drake
	96. Duck
<i>Any Variety (Aylesbury excepted)</i>	97. { Drake (Young)
	98. { Duck (Young)
GEESE .	99. Gander
	100. Goose
TURKEYS .	101. Cock
	102. Hen

AMOUNT OF POULTRY PREMIUMS, £178, 10s.

Special Entry Forms for Poultry Classes.

DAIRY PRODUCE

No Exhibitor to show more than one lot in any Class.

Entry Fees—Members, 4s. ; Non-Members, 6s.

Class	Premiums.
	1st. 2nd. 3rd.
	£ £ £
1. Powdered Butter, not less than 7 lb.	4 2 1
2. Fresh Butter, three 1-lb. rolls	4 2 1
3. Cheddar Cheese, 56 lb. and upwards—£6, £4, £2, £1	£14 13
4. Sweet-Milk Cheese, flat shape (from a dairy where all cheese is made flat shape), white in colour, made according to the Dunlop or other method—£3, £2, £1	6
	<u>£33</u>

Special Entry Forms for Dairy Produce.

WOOL

Three Fleeces in each Entry. Entry Fee, 3s.

PURE BREED CLASSES

Class	Premiums.
	1st. 2nd. 3rd.
	£ £ £
1. Blackface	3 2 1
2. Cheviot	3 2 1
3. Border Leicester	3 2 1
4. Half-Bred	3 2 1
5. Shetland	3 2 1

CROSS BREED CLASSES

6. Oxford-Down Cross	3 2 ...
7. Leicester Blackface Cross	3 2 ...
	<u>£40</u>

TOTAL PRIZE MONEY FOR WOOL, ¹ £40.

Cheviot, Border Leicester, Half-Bred, and Cross-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be shorn in the year of the Show from sheep bred and reared on, or regular stock of, the exhibitor's farm.

Special Entry Forms for Wool Classes.

¹ £7, 7s. collected by Mr Geo. W. Constable, Traquair Estates Office, Innerleithen, and £2, 13s. by Dr Shirra Gibb, Boon, Lauder.

FORESTRY EXHIBITION.

For information as to above, apply to the Secretary, Royal Scottish Arboricultural Society, 19 Castle Street, Edinburgh.

TRIAL OF MOTOR TILLAGE IMPLEMENTS.

An Exhibition Trial of Motor Tillage Implements will be held in the Autumn of 1914, in the vicinity of Edinburgh.

Particulars and Entry Forms to be had from the Secretary.

TRIAL OF IMPROVED POTATO-PLANTERS.

An Exhibition Trial of Improved Potato-Planters will be held in the Spring of 1915, in the vicinity of Edinburgh.

Particulars and Entry Forms to be had from the Secretary.

[ABSTRACT

ABSTRACT OF PREMIUMS.

(Champion Medals given by the Right Hon. THE EARL OF DALKEITH.)

GIVEN BY THE SOCIETY.

1. Cattle	£360	0	0
2. Horses	1047	0	0
3. Jumping Competitions	119	0	0
4. Sheep	430	0	0
5. Swine	106	0	0
6. Poultry	178	10	0
7. Dairy Produce	33	0	0
8. Wool	40	0	0
9. Medals to Breeders, &c.	20	0	0
10. Prizes for Timber ¹	20	0	0
	£2858	10	0
Less Private Subscriptions towards Prizes—£30, £159, £40, £10	289	0	0
Given by the Society	£2614	10	0

CONTRIBUTED PRIZES.

1. The Shorthorn Society	£40	0	0
*2. The late Sir George Macpherson Grant, Bart.	50	0	0
*3. Sir John Macpherson Grant, Bart.	50	0	0
4. Aberdeen-Angus Cattle Society	10	0	0
*5. "Dr Gillespie" Memorial Challenge Trophy	50	0	0
6. Ayrshire Cattle Herd-Book Society	20	0	0
7. Board of Agriculture for Scotland (for Cattle)	30	0	0
8. British Holstein Cattle Society, and 4 Medals	20	0	0
9. Scottish Members of British Holstein Cattle Society	10	0	0
*10. Cawdor Challenge Cup	52	10	0
11. "William Taylor" Memorial Committee	10	0	0
*12. Renfrewshire Perpetual Gold Challenge Cup	250	0	0
13. Hunters' Improvement and National Light Horse Breeding Society	10	0	0
14. Royal Caledonian Hunt	25	0	0
15. Directors in the Show District for Hunter Prizes	159	0	0
16. Hackney Horse Society	10	0	0
17. Members of Shetland Pony Stud-Book Society	10	0	0
18. Board of Agriculture for Scotland (for Horses)	40	0	0
19. National Pony Society	15	0	0
20. "Four Lovers of Breed" (Shetland Ponies)	10	0	0
21. Mr W. W. Anderson, Colzium	10	0	0
22. Mr J. Richmond, Kippenross	10	0	0
23. Mr William Elliot, Lanark	10	0	0
*24. Fife and Kinross Perpetual Gold Challenge Cup	200	0	0
*25. Borthwick Challenge Cup	25	0	0
26. Cheviot Sheep Society	15	0	0
*27. Paisley Perpetual Gold Challenge Cup	300	0	0
28. Society of Border Leicester Sheep-Breeders	20	0	0
29. Teviotdale Farmers' Club	10	0	0
30. Oxford-Down Sheep-Breeders' Association	10	0	0
31. Suffolk Sheep Society	20	0	0
32. Tweeddale Gold Medal	16	0	0
33. Collected by Mr Geo. W. Constable and Dr Shirra Gibb.	10	0	0
	1527	10	0
	£4142	0	0

¹ Grant to Royal Scottish Arboricultural Society for Prizes for Timber.

* Challenge Prizes.

JOHN STIRTON, *Secretary*.GEORGE IV. BRIDGE,
EDINBURGH, April 1914.

The Society's Show for 1915 will be held at Edinburgh.

MEMBERS ADMITTED SINCE THE LIST WAS PUBLISHED IN 1913.

ARRANGED ACCORDING TO SHOW DISTRICTS.

ELECTED 4TH JUNE 1913 AND 7TH JANUARY 1914.

1.—GLASGOW DISTRICT.

ARGYLL.

Admitted
1913 Bankier, Wm. Albert, of Dunlossit, Islay
1914 Campbell, Daniel, J.P., Brencollie, Inveraray
1913 Campbell, John C., Doirchulin House, Dalmally
1914 Campbell, Peter, Inverleiver, Glenetive, Taynuilt
1914 Galbraith, Robert, Ardnacross, Aros, Isle of Mull
1914 Gilchrist, John, Corran, Olachan, Kintyre
1913 Gillespie, Donald, Arabeg and Lagavulin, Port Ellen, Islay
1913 Gillies, Daniel, Balegreggan, Campbeltown
1913 Hall, Major Wm. M'Alister, of Torrisdale, Carradale, Argyll
1914 Lithgow, Miss, Glengorn Castle, Tobermory
1913 M'Beath, D. K., Benmore Estates Office, Kilmun, by Greenock
1914 M'Gregor, Duncan, Soroba Farm, by Oban
1914 M'Innes, Hugh, Glenskellach, by Oban
1913 M'Lachlan, Dr Donald, Ballinaby, Islay
1913 M'William, Peter A., Craigatur, Campbeltown
1913 Ralston, R. Y., Machariach, Campbeltown
1913 Robertson, Alex. D., Argyll Chemical Works, Oban
1914 Sandilands, John, Castles, Lochawe
1913 Young, Robert, Drurn, Campbeltown

AYR.

1913 Alexander, Hugh, Rodgerton, Auchinleck
1914 Allan, James, The Cottage, Kilbirnie
1913 ARTHUR, Sir Matthew, Bart., Fullarton, Troon
1914 Baillie, Robert R. Webster, Langfine Estate Office, Newmilns
1913 Ballantyne, David, Millands Farm, Galston
1913 Bone, John, Merkland Farm, Kirkmichael, Maybole
1914 Bone, William, Auchencloigh, Galston

1913 Boyd, Thomas, South Barr Farm, Beith
1913 Brown, John, Garliffan, Cumnock
1913 Caldwell, James, jun., Burnhouses, Kilmarnock
1914 Craig, David, Hardcroft, Dalry
1913 Craufurd, Mrs Eleanor Louisa Honison, of Dunlop House, Dunlop
1913 Donald, James D., Annandale, Crosshouse
1913 Drennan, John, Hillhouse, Galston
1913 Drummond, Charles, Letterpin, Girvan
1914 Frew, J. D., Glenica, Ayr
1914 Frew, Thomas, St Elmo, Ayr
1913 Gibb, Robert, Brockloch, New Cumnock
1914 Grey, James, Inchbean Farm, Riccarton, Kilmarnock
1914 Harvey, Alex., Trees Farm, Riccarton, Kilmarnock
1913 Highet, John, Bensheine, Dunlop
1913 Houston, John, Pinnacher, Girvan
1913 Hyslop, William, Auchensoul, Barr, by Girvan
1913 Limond, Thomas, 1 Union Buildings, Ayr
1913 M'Creadle, Andrew, Bellimore, Pinwherry, Girvan
1913 M'Creadle, George, jun., Stoneyhill, Darvel
1913 M'Cubbin, John Gillespie, King's Arms Hotel, Maybole
1914 M'Gill, John, Muirmill, Dundonald
1913 Motherwell, A. J., Glencairn Mill, Kilmarnock
1913 Murray, Robert, jun., Windyedge, Crosshouse, Kilmarnock
1913 Reid, Archibald, Bank Head Farm, Beith
1913 Reid, Joseph, Barrhill Farm, Beith
1914 Robb, William, Hindward, Old Cumnock
1913 Sloan, James, Roughside, New Cumnock
1914 Smith, James, Crooks, Dundonald, Ayr
1913 Smith, John, Bruntwoodhill Farm, Galston
1914 Smith, Robert, Low Ashyard, Hurlford
1913 Speir, William, Burn Farm, Dalry
1914 Steel, Matthew, Stonecausay, Symington, Kilmarnock
1913 Stevenson, Allan, Parkhill Farm, Mauchline

- 1918 Stevenson, David, Changue Farm, Cum-
nock
1918 Stevenson, Wm., Royal Bank, Cumnock
1918 Todd, Hugh, Harperland, Dundonald,
Kilmarnock
1918 Wallace, James, Hillhead, Kilmarnock
1918 Wallace, John (Messrs Dixon & Wallace),
Millburn, London Road, Kilmarnock
1918 Wilson, William, Plann Sawmill, Cross-
house, Ayrshire
1918 Wyllie, Alexander, Mossagiel, Mauchline

BUTE.

- 1918 Finlay, James Hamilton, Arran Estate
Office, Brodick, Isle of Arran
1918 Morton, James J., Machrie, Brodick,
Arran
1918 Robertson, George, Arran Estate Office,
Brodick, Isle of Arran

LANARK.

- 1918 Anderson, James, jun., 18 Midlothian
Drive, Shawlands, Glasgow
1918 Ballantyne, Andrew, Shotlin, Strathaven
1918 Ballantyne, Peter, M'Farlane Street,
Glasgow
1918 Bankier, Alexander, Gartloch Farm,
Gartoosh, by Glasgow
1918 Banks, Thomas (Binney & Son, Ltd.),
48 Oswald Street, Glasgow
1918 Barr, Hugh, Muirfoot, Carstairs
1918 Barr, John, East Browncastle, Strathaven
1918 Barr, William, Greenbank, Carlisle
1918 Barr, William, Harelaw, Carstairs
1918 Begg, William, Upper Dunlop, Tollcross,
Glasgow
1918 Blackie, Gavin, Registrar's Office, Bella-
hill
1918 Bone, John Scott (Thos. Hayman & Son,
Ltd.), 26A Robertson Street, Glasgow
1918 Bryson, Andrew, 93 Claythorn Street,
Glasgow
1918 Buchanan, Thomas Bryce, c/o Mrs
Gordon, 84 Second Avenue, Clydebank
1918 Burns, John M. (Richard Hornsby &
Son, Ltd.), 173A St Vincent Street,
Glasgow.
1918 Campbell, Allan, Warrenhill Farm,
Thankerton
1918 Campbell, Colin, 309 Golfhill Drive,
Dennistoun, Glasgow
1918 Chassels, T., Muirhouse, Motherwell
1918 Clerk, Henry J., 15 Gordon Street,
Glasgow
1918 Cooper, James, Muirhead, Carstairs
1918 Cossey, E. Elmer (Lawes' Chemical
Manure Co., Ltd.), 118 Queen Street,
Glasgow
1918 Cowan, Edward Stuart, 5 Oswald Street,
Glasgow
1918 Craig, Andrew, 198 West George Street,
Glasgow
1918 Dempster, James, Lambhill, Strathaven
1918 Dickson, Wm. Collins, Caldwell House,
Uplawmoor
1918 Findlay, Peter, Brackenbras, Bishop-
rigg
1918 Forrest, John, West Brownlee, Carlisle
1918 Hamilton, William, Castlehill Farm,
Kilncadzow, Carlisle
1918 Hendry, George, Dalrymple House,
Cleland
1918 Jackson, Arch., Polmadie Dairy, Pol-
madie Road, Glasgow
1918 Jackson, John, Polmadie Dairy, Pol-
madie Road, Glasgow

- 1918 Jackson, John, Whitehill Farm, Stepps,
Glasgow
1918 Knox, O. E., Netherton Farm, Abington
1918 Lamb, John Swan, Crookboat, Sandilands
Station, Lanark
1918 M'Donald, William (M'Kinnon &
M'Donald), 21 Hope Street, Glasgow
1918 M'Gregor, William, Westhorn Farm,
Tollcross, Glasgow
1918 Mackenzie, D., Afton, Busby
1918 M'Lellan, Walter H., 29 Roselea Drive,
Dennistoun, Glasgow
1918 M'Nicol, Daniel (Robertson, Lockhart,
& Co.), 119 Duke Street, Glasgow
1918 Mills, J. K., 50 Robertson St., Glasgow
1918 Murdoch, James, Carntyne, Shettleston
1918 Mure, Lady Georgeana, Hall of Caldwell,
Uplawmoor, Glasgow
1918 Pate, Thomas J., Tofts, Douglas
1918 Paul, Andrew, jun., Calthness Street,
Glasgow
1918 Prentice, Thomas, Carlowrie, Udding-
ston
1918 Pringle, James, Castlehill Farm, Carlisle
1918 Ramsay, Thomas, Cadzow Villa, Carlisle
1918 Reid, Hugh, Belmont, Springburn,
Glasgow
1918 Russell, Wm., Cleghorn Mills, Lanark
1918 Scott, Alexander, Bogside, Carlisle
1918 Scott, John, Cockridge Farm, Carstairs
1918 Scott, William, Cockridge Farm, Carstairs
1918 Scott, William, Cowford Farm, Carstairs
1918 Shanks, John B., "Lisowen," Dum-
breck, Glasgow
1918 Sinclair, John, Leghoemshields, Biggar
1918 Smellie, William, 579 Main Street,
Shettleston
1918 Stewart, Hugh, Southfield, Kirkmuirhill
1918 Taylor, David, Prospect Hill Road,
Mount Florida, Glasgow
1918 Thomson, John, 106 Taylor Street,
Glasgow
1918 Walker, Andrew, Craighead Mill, Les-
mahagow
1918 Warnock, James, Garrion Farm, Garrion,
Wishaw
1918 Watson, Archibald, jun., 75 West Nile
Street, Glasgow
1918 Watson, John, 24 St Vincent Place,
Glasgow
1918 Waugh, John (of Messrs P. & R. Flem-
ing), Graham Square, Glasgow
1918 White, Matthew, jun., Scotstoun Flour
Mills, 45 Hope Street, Glasgow
1918 Wright, William, Kirkwood, Strathaven

RENFREW.

- 1918 Adam, James, East Walkinshaw, Ren-
frew
1918 Adam, John, jun., East Walkinshaw,
Renfrew
1918 Adam, Robert, East Walkinshaw, Ren-
frew
1918 Aitkenhead, William, Shawmosa, Pollok-
shaws
1918 Aitkenhead, Robert, Larkfield, Gourcock
1918 Barclay, Allan, 6 Caledonia Street,
Paisley
1918 Barrowman, Richard, Loanhead Farm,
Lochwinnoch
1918 Brownridge, Dr Robert, Caliside Terrace,
Paisley
1918 Chalmers, David W., 29 Newton Street,
Greenock
1918 Chapman, Robert, North Arkleston,
Paisley
1918 Cook, John W., 48 South Street,
Greenock

1913 Coats, P. H., Corsebar, Paisley
 1913 Craig, John, North Park, Greenock
 Road, Paisley
 1913 Craig, Thomas, Morrislea, Greenock
 Road, Paisley
 1913 Crawford, Robert, Burnside Farm,
 Langbank
 1914 Cumming, William, 22 Well Street,
 Paisley
 1913 Cunningham, James, St James Street,
 Paisley
 1913 Darroch, Major Duncan, Gourrock
 House, Gourrock
 1913 Eadie, John (D. & J. Eadie), Johnstone
 1913 Fairweather, Wallace, Faside and Mearns
 Castle, Newton Mearns
 1913 Glen-Coats, Harold, Paisley
 1914 Hill, William A., Greenock Grain Mills,
 Greenock
 1913 Holmes, Robert, Faulds Farm, Kil-
 barchan
 1913 Holmes, Robert, Donaldfield, Bridge of
 Weir
 1913 INVERCLYDE, Lord, Castle Wemyss,
 Wemyss Bay
 1914 Kilpatrick, James, jun., 9 Greenlaw
 Avenue, Paisley
 1913 Lang, John, Cresswell, Greenock
 1913 Livingstone, Andrew, 20 Gauze Street,
 Paisley
 1913 Lyle, James, Ditch, Bishopton
 1913 M'Aulay, Robert, Craigs Farm,
 Greenock
 1913 M'Gregor, J. Gillray, M.R.C.V.S., West
 Blackhall Street, Greenock
 1913 M'Intyre, Alexander, Leitchland Farm,
 Greenock
 1913 M'Intyre, Wm., Langhill Farm, Inverkip
 1914 Mackean, James Anderson Dunlop,
 Rozelle, Paisley

1913 Marshall, David, Leitchland, John-
 stone
 1914 Marshall, William, 12 St James Avenue,
 Paisley
 1913 Mathie, James, Cove Farm, Gourrock
 1913 Mathie, W. J. C., Pennyfern Farm,
 Greenock
 1913 Mitchell, Kenneth, Caledonia Street,
 Paisley
 1913 Munn, Thomas, Branchton Farm,
 Greenock
 1913 Paisley, John, Braeface, Neilston
 1913 Paterson, James, Eglinton Arms Hotel,
 Eaglesham
 1913 Paton, George, Haining Farm, Renfrew
 1913 Pottie, Alex., jun., V.S., Love Street,
 Paisley
 1914 Rennie, William Watt, 8 George Street,
 Paisley
 1914 Ritchie, Wm., Craigview, Johnstone
 1913 Rowand, Alex., Stanley, Brookfield, by
 Johnstone
 1913 Scott, James, Green Farm, Kilmacoll
 1913 Scott, John, Shieldhill Farm, Greenock
 1913 Service, John, Tontine Hotel, Greenock
 1913 Stevenson, Matthew, jun., Linburn,
 Inchinnan
 1913 Thomson, Andrew, Wemyss Farm,
 Wemyss Bay
 1913 Walker, Robert Stewart, The Hill,
 Greenock
 1913 Waters, Archibald F. C., 16 St James
 Avenue, Paisley
 1913 Wilson, James, Capellie, Neilston
 1913 Wylie, James, 85 Caledonia Street,
 Paisley
 1913 Young, A. R., 41 Gordon Street, Paisley
 1913 Young, Robert, 41 Gordon Street,
 Paisley
 1913 Young, Wm., 41 Gordon Street, Paisley

2.—PERTH DISTRICT.

FIFE.

1913 Coventry, William, Beaverkie Farm,
 Cowdenbeath
 1913 Ferguson, John J. Harrower, M.B.,
 Fife and Kinross Asylum, Cupar-
 Fife
 1913 Henderson, John, 61 Main Street,
 Lochgelly
 1914 Henderson, John, Scotsraig Mains,
 Tayport, Fife
 1913 Martin, John, Church Street, St
 Andrews
 1913 Osborne, Thomas, Pitkenzie Farm,
 Auchtertool, Kirkcaldy
 1914 Rankin, Lewis D., Devonside, Saline,
 Fife
 1913 Wilson, John, East Colquhally, Loch-
 gelly

FORFAR.

(WESTERN DIVISION.)

1914 Fairlie, John M., Eagle Buildings,
 Trades Lane, Dundee

1914 Motion, John, Keillor Farm, Coupar-
 Angus, Forfar
 1914 Steele, John, 3 Exchange Street, Dundee

PERTH.

1914 Adamson, James, Balbeggie, *vid* Perth
 1913 Bradley, Walter, Homelea Poultry Farm,
 Erris
 1913 Burnfield, John, Benchill, Stanley
 1914 Dewar, John, jun., Dupplin Castle, Perth
 1913 Hay, Stewart J., East Culmalundie,
 Tibbermore, Perthshire
 1913 Hunter, George, Estates Office, Gart-
 more, Perthshire
 1913 Hunter, James Gardyne, of Horn, Erris
 1913 Macdonald, David Donald, Atholl Arms
 Hotel, Blair Atholl
 1914 Mackintosh, Peter, Coilvoulin, Pitlochry
 1913 Irving, Edward (Richard Garret & Sons,
 Ltd., Leiston), South Street, Burrel-
 ton, Perthshire
 1914 Robertson, James, Balanloan, Blair
 Atholl
 1913 Robertson, Wm., Forehill, by Murthly
 1914 Simpson, John J., Estate Office, Dupplin
 Castle, Perth
 1914 Smith, Alexander, Cranley, Meikleour,
 Perth

3.—STIRLING DISTRICT.**CLACKMANNAN.**

- 1913 Watson, William, Broadcarse Farm,
Clackmannan
1913 Wilson, D. O., Co-operative Society,
Ltd., Alloa

DUMBARTON.

- 1914 Caldwell, James, Townhead, Helens-
burgh
1913 Ewing, Humphrey Crum, of Strathleven,
Dumbarton (Nevis, North Berwick)
1913 Watt, John, Lenzie Mill, Cumbernauld

PERTH.

- 1913 Anderson, Thomas L., Damside, Auch-
terarder
1913 Cairns, William, Glenfinlas, Callander
1914 Forbes, John, Severie, Doune

- 1914 M'Coish, James Manson, Mallerbeg,
Glenartney, Comrie
1914 M'Innes, Matthew, Pittentian, Crieff
1913 Roy, William, East High Street, Crieff
1914 Shield, George R., Estate Office, Gart-
more, Perthshire
1914 Wood, Wm., Farnton, Machany

STIRLING.

- 1914 Gardner, Cornelius S., Brier Glen, Pol-
mont
1914 Gilchrist, William, Wholdfletts Farm,
Grangemouth
1913 Gray, Robert, Binniehill Farm, Slam-
annan,
1914 Grindlay, Wm., Knowhead Farm,
Dennyloanhead
1913 Malcolm, James F., Dunmore, Larbert
1913 Orr, George, Boagston, Avonbridge
1913 Smith, Adam, Lochlands, Larbert
1913 Waters, Mrs Marian, Glenample, Loch-
earnhead
1913 Young, R., Parkhall Home Farm,
Polmont Station

4.—EDINBURGH DISTRICT.**EDINBURGH.**

- 1914 Buchan, John, Corstorphine Bank,
Corstorphine
1913 Dick, Robert, Turniemoon, West Calder
1914 Donaldson, R. F., 138 Constitution
Street, Leith
1913 Fagan, T. W., M.A., Edinburgh and East
of Scotland College of Agriculture, 13
George Square, Edinburgh
1914 Henderson, James, The Craigs, Mid-
Calder
1914 Laird, Eric P., Pinkhill House, Murray-
field
1914 Lindsay, Argyll, Clifton Hall, Ratho
1914 Lindsay, Douglas A., 25 Pentland
Terrace, Edinburgh
1914 Macdonald, James H. Stephens, 2
Garscube Terrace, Murrayfield, Mid-
Lothian
1913 Millar, Robert, Loquhariot, Gorebridge
1914 Neilson, Captain W. Gordon, Carcraig,
Davidson's Mains
1914 Pendreigh, James, Dalhousie, Bonny-
rigg
1914 Russell, Peter H., Burnwynd, Kirk-
newton

- 1914 Simpson, William, 32 Charlotte Square,
Edinburgh
1913 Walker, William, Crofthead Farm, West
Calder
1914 Wilson, John, Swanfield Mills, Leith
1914 Wilson, J. T. R., Bentarsen, Slateford

HADDINGTON.

- 1913 Broadfoot, R. M'C., Whitekirk, Preston-
kirk
1914 Fortune, Thomas, Stoneypath Tower,
Garvald
1914 Lothian, George, Prora, Drem
1914 Miller, Daniel, West Garlton, Hadding-
ton
1914 Renwick, Andrew, Byres, Longniddry
1913 TWEEDDALE, The Marquis of, Yester,
Gifford

LINLITHGOW.

- 1913 Baxter, Wm., Hainings, Bo'ness
1913 Reynard, James Napier, Manuel House,
Linlithgow

5.—ABERDEEN DISTRICT.**ABERDEEN.**

- 1914 Massie, George Duncan, Solicitor, 147
Union Street, Aberdeen
1913 Milne, Alex., Veterinary Chemist, Maud
1914 Milne, John, Mains of Williamstone,
Inach
1914 Minnie, George, Lochend, Murtle, Aber-
deen
1914 Murray, James, Linden Cottage, Old
Meldrum
1913 Tocher, J. F., D.Sc., F.I.O., Crown
Mansions, 41½ Union Street, Aber-
deen

BANFF.

- 1914 Forbes, Henry Newman, Cowhythe,
Portsoy
1913 Mair, Alexander, Blackpool, Buckie

KINCARDINE.

- 1913 Brownie, F. A., North Mains, Findon,
Portlethan, Kincardineshire
1913 Sinclair, Dr William, Kirkhill, Nigg,
Kincardineshire

6.—DUMFRIES DISTRICT.

DUMFRIES.

- 1913 Baird, John, 85 Castle Street, Dumfries
 1913 Cranstoun, J. G. M., Nunland, Dumfries
 1913 Crichton, D. W., Limekilns House, Annan
 1913 Dickie, Charles H., Kilmark Farm, Thornhill, Dumfries
 1914 Dickson, Thomas, Braehead Farm, Dumfries
 1914 Fergus, A. M., Houston, Milton, Beattock
 1914 Forsyth, John, Nivenhill, Rigg, Gretna, Dumfries
 1913 Gladstone, Hugh S., of Capenoch, Thornhill
 1913 M'Cartney, Wm. Murdoch, Smallrigg, Lochmaben
 1914 MacKillop, James, Park House, Ecclefechan
 1914 Murray, J. Herbert, Kirkland, Closeburn, Dumfriesshire
 1914 Tweedie, Baillie, Annan
 1914 Weir, James, Drumcruickton, Thornhill, Dumfriesshire
 1913 Weir, John, Midtown Farm, New Abbey, Dumfries
 1913 Wilson, Andrew, Esbie, Lochmaben

KIRKCUDBRIGHT.

- 1914 Houston, David, Overlaw, Kirkcudbright
 1914 Johnstone, Harry, Grain Merchant, Kirkcudbright
 1914 Montgomery, Wm., jun., Banks, Kirkcudbright
 1913 Picken, James, Torr's Farm, Kirkcudbright
 1913 Slater, John, Grange Farm, Kirkcudbright
 1913 Slater, Thomas, Hartburn Farm, Kirkcudbright
 1913 Stewart, Thomas, Lochill Farm, Ringford, Kirkcudbright
 1914 Young, Arthur, Garroch, New Galloway, Kirkcudbrightshire (26 Hans Court, London, S.W.)

WIGTOWN.

- 1913 Allan, Andrew, Appleby Farm, Whithorn
 1914 Forster, John, Mains of Larg, New Luce
 1913 Kennedy, W. Douglas, Marbrack, Carphairn, Galloway
 1913 M'Candlish, Andrew C., Clauch, Sorbie
 1914 M'Connell, James, Boreland, Whauphill, Wigtownshire
 1914 Michie, Henry M., Logan Estates Office, Chapel Rossan, Stranraer
 1914 Purves, James, Estates Office, Dunskey, Portpatrick

7.—INVERNESS DISTRICT.

ELGIN.

- 1914 Grant, A. Mackenzie, Seafeld Square, Rothes, Elgin

INVERNESS.

- 1913 Cameron, John A., National Bank, Portree
 1914 M'Donald, Gordon, South Laggan, Invergarry
 1914 Macgillivray, Finlay, Garboll, Tomatin
 1914 Macgillivray, Kenneth, Clunes Mains, Kirkhill, Inverness
 1914 Macintyre, William, Erchless Estates Office, Strathglass
 1914 Mackintosh, Donald A., Drumore, Croy, Inverness
 1914 Mackintosh, James, Glackton, Gollanfield

- 1914 Munro, Alexander, Galcantray, Croy, Gollanfield
 1914 Robertson, Donald, Breakachy, Laggan, Kingussie
 1914 Stuart, Francis, Kerrowdown, Drumadrochit, Inverness

ROSS AND CROMARTY.

- 1914 Budge, R. E. W., Easter Rarichie, Nigg, Ross-shire
 1914 Firth, Richard Charles Dundas, Dundonnell House, Dundonnell, Ross-shire
 1914 Gordon, Alex. P., Arabella, Nigg, Ross-shire
 1913 MacLennan, John, Estate Office, Strathcunan, Muir of Ord
 1913 Munro, Finlay, jun., Rockfield, Fearn

SUTHERLAND.

- 1913 Campbell, Ian Macgregor, Shinnes, Lairg

8.—BORDER DISTRICT.

BERWICK.

- 1914 Durie, Norman Percival, Ramrig, Duns
 1914 Lyal, Thomas Brown, Greenknowe, Gordon
 1914 M'Creath, W. R., Berwick-on-Tweed

PEEBLES.

- 1914 French, Adam, Callands, West Linton

ROXBURGH.

- 1914 Bell, Robert, Kirkton, Hawick
 1914 Dunlop, Colonel J., O.B., Struan, St Boswells

List of Members.

1913 Fenwick, Frank, North House, Hawick
 1914 Gallaway, J. H., Mount Ulston, Jedburgh
 1914 Gladstone, James, Wester Langlee, Gala-shiels
 1914 Haddon, A. Douglas, Royal Bank Buildings, Hawick
 1914 Inglis, Andrew, Nether Tofts, Hawick
 1914 McConnel, Andrew, Scraesburgh, Jedburgh

1914 Usher, Harry, Courthill, Hawick

SELKIRK.

1914 Dun, George, Island House, Galashiels
 1914 Dunlop, Charles W., of Whitmuir Hall, Selkirk
 1914 Mill, John S., Greenhill, Selkirk
 1914 Stark, Robert, Railway Station, Selkirk

ENGLAND.

1914 Ballam, E. D. C., Woodbridge Road, Ipswich
 1913 Ballam, E. J. C., Maple House, Woodridge Road, Ipswich
 1913 Bauer, C. (Moeller & Condrup, Ltd.), 78 Fore Street, London, E.C.
 1914 Briggs, Walter, Linden Hall, Borwick, Carnforth, Lancashire
 1914 Burrell, Charles Wm. Wilberforce, Connaught House, Brandon, Suffolk
 1914 Cochrane, Walter Neville, St John Chapel, Co. Durham

1913 Cridlan, John J., Maisemore Park, Gloucester
 1913 Gilbanks, G. W., Rawcroft, Penrith
 1913 Gresson, C. R. H., Edgecote, Banbury, Oxon.
 1913 Martin, Leonard J., Associated Manufacturers Company, 72-80 Mansell Street, Aldgate, London, E.
 1913 Wallace, Falconer L. (Candacraig, Strathdon), Wardington Manse, Banbury, Oxon.
 1914 Young, Wm., Durham House, Carlisle

FOREIGN COUNTRIES.

1914 Ogilvy, Allister, Lake Copais Co., Ltd., Kribba, Greece

Number of Members in List published 1st March 1913	.	.	6803
Number of Members admitted in June 1913	.	.	214
Number of Members admitted in January 1914	.	.	151
			<hr/>
			7168
Deduct deaths, resignations, &c.	.	.	258
			<hr/>
Total	.	.	6915

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